NOGAP B.6; VOLUME 4: CHEMICAL DATA COLLECTED IN THE BEAUFORT SEA, SUMMER, 1987

by

R.W. Macdonald, K. Iseki, M.C. O'Brien, F.A. McLaughlin, D. McCullough, D.M. Macdonald, E.C. Carmack, H. Adams, M. Yunker, G. Miskulin and S. Buckingham

Institute of Ocean Sciences
Department of Fisheries and Oceans
Sidney, B.C.

1988

CANADIAN DATA REPORT OF HYDROGRAPHY AND OCEAN SCIENCES NO. 60

Canada

89-00722/

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Les établissements des Sciences et Levés océaniques dans les régions et à l'administration centrale ont cessé de publier leurs diverses séries de rapports depuis décembre 1981. Vous trouverez dans l'index des publications du volume 38 du *Journal canadien des sciences halieutiques et aquatiques*, la liste de ces publications ainsi que le dernier numéro paru dans chaque catégorie. La nouvelle série a commencé avec la publication du Rapport n° 1 en janvier 1982.

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Cat. No. Fs 97 – 16/60 ISSN 0711-6721

Correct citation for this publication:

R.W. Macdonald, K. Iseki, M.C. O'Brien, F.A. McLaughlin, D. McCullough, D.M. Macdonald, E.C. Carmack, H. Adams, M. Yunker, G. Miskulin and S. Buckingham,1988. NOGAP B.6; Volume 4: Chemical data collected in the Beaufort Sea, Summer 1987
Can. Data Rep. Hydrogr. Ocean Sci: 60, 103pp.

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Abstract

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As part of the NOGAP B.6 program, with major objectives to determine hydrocarbon pathways and primary productivity of the waters overlying the Mackenzie Shelf, we measured water properties (biological, chemical and physical) on several transects extending from inshore waters to the shelf break, and one deep station (3500m) in the southwestern Canada Basin. The samples were collected from the C.S.S *John .P. Tully* during July - September, 1987. We report here the chemical measurements made on bottle samples; these include salinity, temperature, dissolved oxygen, phosphate, nitrate, reactive silicate, chlorophyll *a*, total suspended solids, and particulate organic carbon and nitrogen.

Keywords; Arctic, chlorophyll *a*, coastal zone, nutrients, oceanography, POC, PON, salinity, total suspended solids.

Résumé

R.W. Macdonald, K. Iseki, M.C. O'Brien, F.A. McLaughlin, D. McCullough, D.M. Macdonald, E.C. Carmack, H. Adams, M. Yunker, G. Miskulin and S. Buckingham, 1988. NOGAP B.6; Volume 4, Chemical Data Collected in the Beaufort Sea, Summer, 1987. Can. Data Rep. Hydrogr. Ocean Sci: 60, 103pp.

Dans le cadre du programme NOGAP B.6 visant à constater les trajectoires des hydrocarbures et la production primaire des eaux au-dessus du plateau continental Beaufort, nous avons mesuré les propriétés de l'eau (biologiques, chimiques, physiques) sur plusieurs lignes que se sont étendues des eaux côtièrs jusqu'à la dénivellation du plateau continental, et à une station de profondeur de 3500 mètres dans le bassin canadien du sud-ouest. Les échantillons ont été recueillis par C.S.S. *John. P. Tully* de juillet à septembre 1987. Nous reportons ici sur les analyses chimiques des échantillons de bouteille, en comprenant la salinité, la temperature, l'oxygène dissolu, le phosphate, le nitrate, le silicate, le chlorophyll *a*, les sédiments transportés en suspension au total, et les particules de carbone organique et d'azote.

Mots-clés: Arctique, chlorophyll *a*, zone côtière, nutriments, océanographie, POC, PON, salinité, sédiments en suspension au total, température, sédiments en suspension au total.

Acknowledgements

This work was funded by **Indian and Northern Affairs, Canada**, as part of the *Northern Oil and Gas Action Program*. We are grateful for the support provided by *Polar Continental Shelf Project*; our program, along with many others, would have been impossible without them. We thank the officers and crew of the *John. P. Tully* for their friendly assistance in carrying out the field work, and for retrieving our equipment from Tuktoyaktuk. Special thanks are due to Dave Stanway and Bruce Irving for a timely repair of the winch without which we would have lost the opportunity to carry out the deep oceanographic cast. S. Thomson assisted with advice on style, and with final text-editing of this report. A. Ages translated the abstract into French. The manuscript was prepared using LaTeX.

1 INTRODUCTION

As part of a major inter-disciplinary study (NOGAP-B.6) to measure the transport and fate of hydrocarbons over the Beaufort Shelf and the primary productivity of these coastal waters we conducted a spring sampling program (operated out of Tuktoyaktuk with aircraft support to sample from the ice). To complete the field program, a shelf-wide cruise was carried out on the C.S.S. *John. P. Tully* in the summer of 1987.

The primary logistic goals (1987) for the work done by Institute of Ocean Sciences staff were as follows:

- Collect time series measurements from late winter through to late summer for physical, chemical and biological properties on a transect extending from Kugmallit Bay (Mackenzie River) to the Shelf edge. This would include short-term sediment trap and current meter moorings, and hydydrocarbon *in situ* pumps.
- Deploy and recover moorings at the shelf edge to measure currents, light transmissivity, and sedimentation throughout the entire season (March 1987 - March 1988).
- Make measurements to delineate plume structure in the near-shore zone with and without ice-cover.

These measurements are augmented with satellite imagery, and Mackenzie River source functions for water flow, sediment discharge, and hydrocarbon content.

In this document we report the supporting chemical oceanographic data collected during the C.S.S. *John. P. Tully* program. A brief overview of the samples collected from the ship is given below: **bold** font is used for data which have been fully analyzed and are reported here in the accompanying tables, normal font is used for data which have been collected concurrently and are, or will be, available elsewhere. Other *Hydrography and Ocean Sciences* data reports available in the NOGAP B.6 series are listed inside the back cover.

- Water samples (hydrocasts): **salinity, nutrients (reactive silicate, phosphate, nitrate plus nitrite)**, oxygen isotopes, tritium **total suspended solids, particulate organic carbon and nitrogen, chlorophyll** *a*, pigments by HPLC, ^{14}C productivity (in situ and incubator), total carbon dioxide, phytoplankton, particle identification by scanning electron microscopy, and particulate carbon and nitrogen isotopic composition, and Secchi depth.
- Radium isotopes.
- Water samples (Seastar Pump, large volume filtration): for hydrocarbons, particulate and dissolved.
- Water samples for cross-flow filtration to measure particulate, colloidal and dissolved hydrocarbons, and dissolved organic carbon.
- Zooplankton (vertical net hauls: 300 μm mesh, 0.45 m diameter, 1.5 m length, samples preserved in buffered formalin).
- Conductivity, temperature, % transmission and pressure: Applied Microsystem and Guildline CTTD system.

- Light intensity: photosynthetically active radiation (PAR) was measured continuously (incident radiation) at *Polar Continental Shelf Project*, Tuktoyaktuk (LI-COR quantum sensor LI-190SB), and vertical profiles at the productivity stations (LI-COR underwater spherical quantum sensor LI-193SB).
- Satellite imagery: temperature, turbidity, and ice distribution (due to poor weather, very few useful images were collected in August, 1987).
- Sequential sediment trap/current meter mooring recoveries (these were put in through the ice, recovered and serviced on the *John. P. Tully* and redeployed until March, 1988).
- Short-term (2 week) sediment trap (bongo and Kenny) moorings.
- Wind and weather records (logged at Tuktoyaktuk and on the ship).
- Short-term (2 week) mooring to measure bottom currents and sediment resuspension in response to storms.
- Microbial activity and hydrocarbon degrading capability of water and resuspended sediments.
- Gravity cores for chemical determination and chronology, and Smith-MacKintyre grabs for hydrocarbon determination.
- Surface ARGOS drifters and recovery of long term moorings (H. Melling, IOS).
- Productivity and oblique zooplankton net hauls (carried out independently by DFO, Winnipeg).

1.1 Stations

1.1.1 Station Nomenclature

Each station has been given a two-part designation; xP-yQ, where x and y are numbers and P and Q are letters. The alpha-numeric *before* the hyphen refers to location; this is simply a number for planned stations on the main transect(s) across the shelf and a number followed by a letter for stations which were added on site (to trace interesting water features or substituted due to inability to land at the chosen site). For a few stations, the letter precedes the number; these are either the 4 'SS' stations at which we placed sequential trap - current meter moorings or near-shore transects which were added to the program in the field to delineate the plume structure (mostly CTTD work). The alpha-numeric *after* the hyphen refers to time period (see itemized list below) and sequential visit to a station within time period (letter). An example of a typical station number would be 5A-2B; this refers to station 5A (close to station 5), the second sampling period (late April), and the third time within that period that we visited the station. Dates and locations for all stations are given in the Table headers. Data collection periods for the 1987 NOGAP B.6 arctic program are listed below, with **bold** font used for the chemical data presented in this report (basically time periods -5 and -6).

1. March 30 - April 8 (ice work)
2. April 23 - April 28 (ice work)
3. May 23 - May 26 (ice work)

4. June 2 - July 30 (ice work (CTTD only), Mackenzie River sampling)

5. **July 31 - August 30 (C.S.S.** *John. P. Tully*, shore peat sampling)

6. **Aug 31 - Sept 9 (C.S.S.** *John. P. Tully*)

1.1.2 Station Locations

Figures 1, 2 and 3 show the station locations for the chemical sampling conducted from the *John. P. Tully*; station coordinates are given in the station headers of the data tables. The station locations were determined from a transit Satellite Navigator by the ship's officers. The majority of positions are expected to be within 1 km of the true position [*Huggett and Mortimer*, 1971]. (This appears to be a reasonable estimate of the error elipse since we were able to relocate all of our bottom moorings by navigating to within 2 km, the range of our acoustic transponders. A further test was available in position fixes from the ARGOS drifters when they were stored on the after deck.)

Survey coverage extended beyond the shelf break reflecting the distance of ice retreat and the large area of open water in the summer of 1987; indeed, we were able to take a deep station (3500m A1-5) due to the extreme retreat of the ice.

2 METHODS

2.1 Field Sampling

Sampling was carried out from either the forward starboard chains (below and aft of the bridge) or from the starboard side of the after deck. For the shallow near-shore stations and Mackenzie River stations we used a hydrographic launch to collect samples and ferry them back to the *John. P. Tully*. We used a combination of 5 *l* Niskins, 10 *l* Go-Flo bottles, and submersible pumps (down to about 20m) to collect the water. Subsampling from bottles followed the normal oceanographic procedure of dissolved oxygen and total CO_2 first (using tygon tubing), followed by salinity, nutrients and oxygen isotopes. The remaining water (usually the total content of the 10 *l* carboy, excluding rinse water) was sampled into 20 *l* carboys through a twice-rinsed polyethylene funnel, and taken down to the ship's laboratory where it was subsampled (with gentle agitation to suspend and homogenize the particulates) into 1 *l* - 2 *l* polyethylene carboys for the various other analyses: total suspended solids (TSS), particulate organic carbon and nitrogen (POC, PON), chlorophyll *a*, pigments (by HPLC), and productivity. Carboys and samples were protected from direct sunlight during manipulations. All sampling and subsampling involved double rinses, and we attempted to re-use containers repeatedly at similar depths to minimize cross contamination and reduce the importance of rinsing.

Oceanographic reversing thermometers were placed (in duplicate) on the 5 *l* Niskins; contents of the 10 *l* Go-Flo (placed directly above and/or below the Niskin) were used to provide the large volumes of water required (> 20 *l*) for the particulate and productivity studies.

2.2 Laboratory Methods

Errors for the various methods reported here are expressed as precision and accuracy as summarized in Table 1. Pooled variance, s_p, is calculated as

$$s_p = \sqrt{\frac{\nu_1 s_1^2 + \cdots + \nu_i s_i^2}{\nu_1 + \cdots + \nu_i}}$$

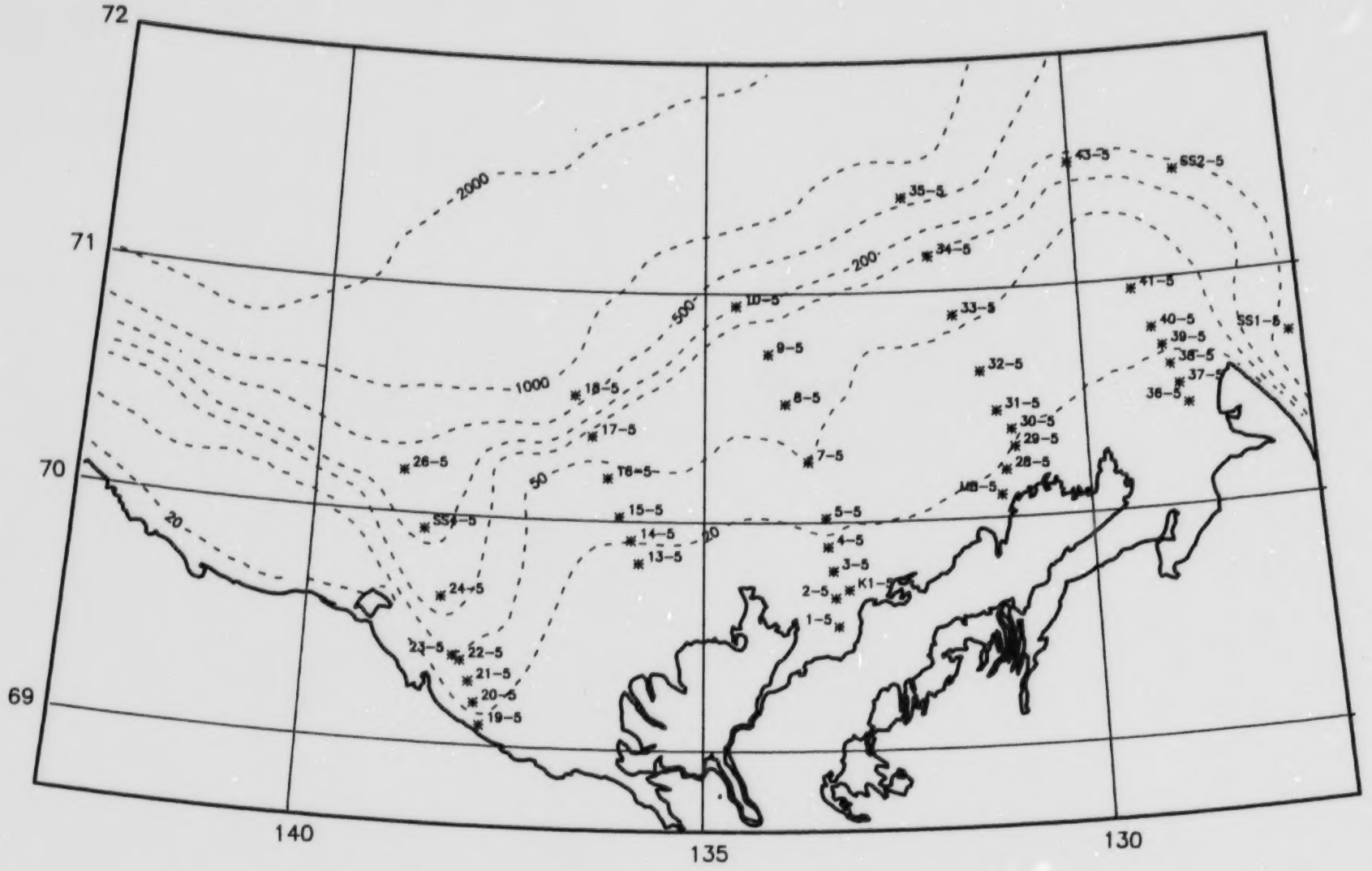


Figure 1: Station locations for the *John. P. Tully* chemical data.

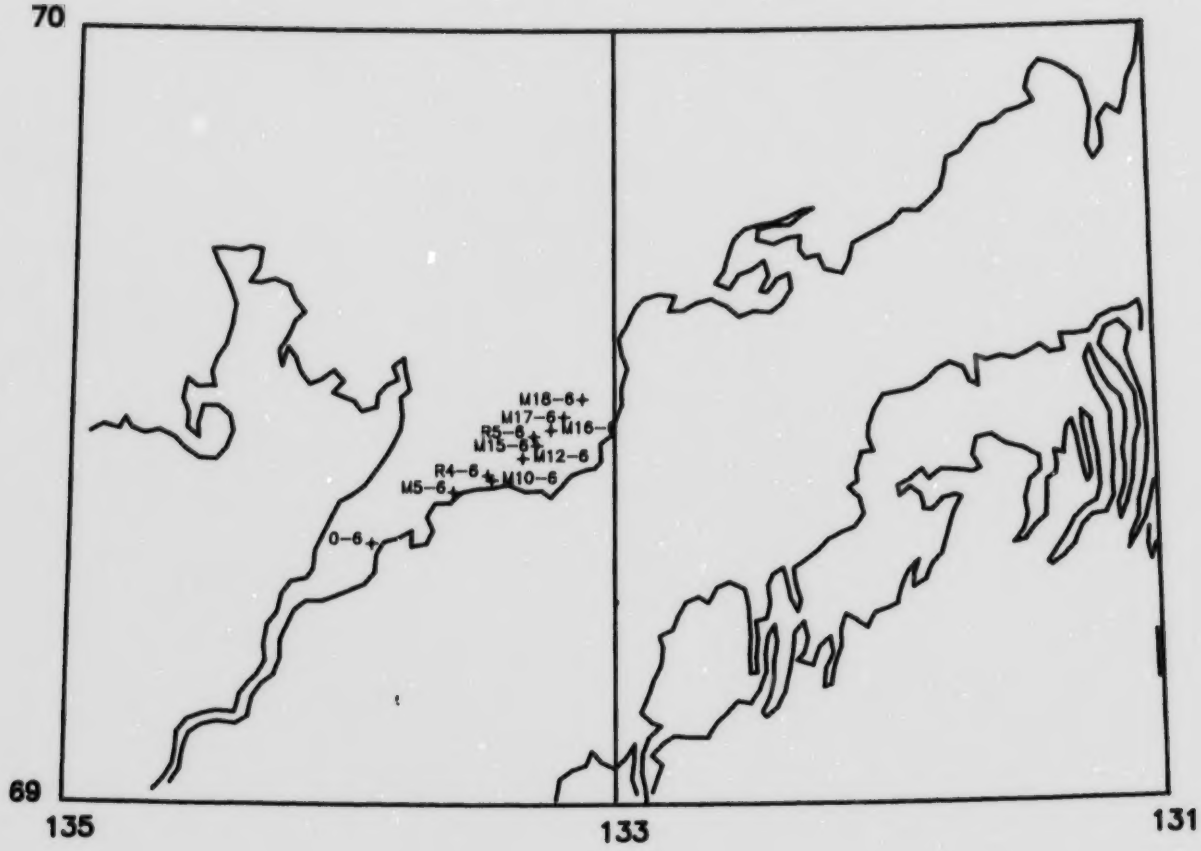


Figure 2: Station locations in Kugmallit Bay - Mackenzie River

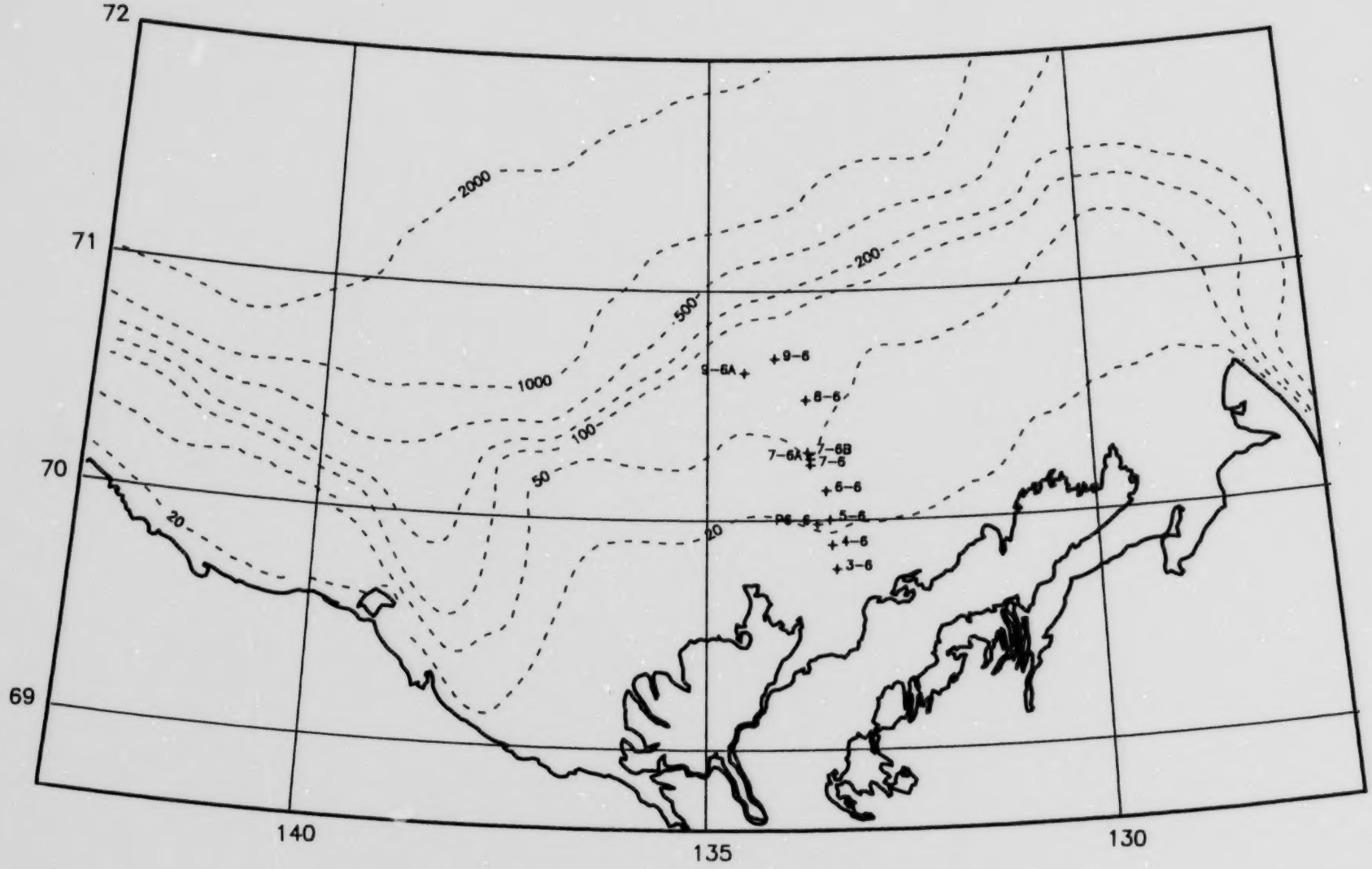


Figure 3: Station locations for the re-occupation of the main transect.

Table 1: Estimates of error: basis of calculation and error models are given in the text.

measurement	units	precision (s_p)	Standard Reference Material
Salinity	psu	≤0.01	IAPSO Seawater
Temperature	°C	0.014	NBS Calibration
Silicate	mmol m^{-3}	0.35	Sagami SiO_2
Nitrate	mmol m^{-3}	0.25	Sagami KNO_3
Phosphate	mmol m^{-3}	0.09	Sagami KH_2PO_4
Dissolved Oxygen	mmol m^{-3}	1.7	Sagami KIO_3
TSS	mg l^{-1}	7%-25%[1]	No SRM available
POC	μg l^{-1}	1.2	Acetanilide
PON	μg l^{-1}	0.6	Acetanilide
Chl *a*	mg m^{-3}	0.04	No SRM available

where $\nu_i = n_i - 1$ degrees of freedom, and the n_i and s_i refer to the number of replicates and their standard deviation for the individual components used in the pooled standard deviation calculation.

2.3 Salinity

Salinity samples were drawn into 200 m*l* salinity bottles after 3 rinses from 10 *l* Go-Flo bottles or 5 *l* Niskin bottles. The samples were then capped tightly until determination.

The salinities were analyzed on a Guildline Autosal (Model 8400A) instrument on board the *John. P. Tully*; data are reported in practical salinity units (psu) [see *Lewis and Perkin*, 1978]. During analyses the instrument was standardized against Standard Sea Water of Chlorinity 19.373 (K_{15} = 0.99997). The Standard Sea Water was obtained from Standard Seawater Service, Institute of Oceanography, Wormley, Godalming, Surrey, England.

Standard deviation of repeated measurements on the same sub- sample was less than 0.0003 psu. Precision of the analysis was evaluated from independent duplicate samples drawn from the same Go-Flo or Niskin bottle, and from performance on control samples run during determinations. For duplicates taken from sample bottles tripped in regions of the water column where salinity gradients were low we found the pooled standard deviation, $s_p = 0.008, \nu = 32$. Performance on the control samples was $s_p = 0.002, \nu = 18$. Where bottles were tripped in a zone of large salinity gradients (the top 10m or so), we observed poorer agreement between replicate salinities; the worst case was a salinity difference between duplicates of 0.17 where the salinity gradient was 0.77 psu m^{-1}. We ascribe this poor agreement to salinity inhomogeneity within the bottle and not sampling or analytical error; these samples (n=4) were not used in the error evaluation.

2.4 Temperature

Temperature was measured with paired oceanographic restricted- range thermometers (low temperature) manufactured by Richter and Weise (Berlin), Yoshino Factory (Tokyo) or Gohla (Kiel). These were read twice to the nearest 0.01 C°; agreement between pairs was s_p=0.014 C° (for 139 pairs). Two pairs were eliminated by Chauvenet's criterion as falling far outside the normal per-

[1] Error varies with the concentration of particulates in the sample; see text.

formance of paired thermometers ($\Delta_T = 0.24, 0.17$); in each case one of the thermometers appears to have malfunctioned or to have been misread.

2.5 Dissolved Oxygen

Dissolved oxygen samples were 'pickled' immediately in the wet lab and taken to the ship's laboratory for determination by the Micro-Winkler technique [*Carpenter*, 1965]. Analyses were carried out within 24 hours of collection. Calibration of the thio-sulphate solution was carried out with each titration set (daily) by using Sagami primary standard KIO_3. Precision of the method was routinely monitored with blind replicate samples drawn at a frequency of about 20% from the Niskin or Go-Flo bottles. For the data reported here we obtained the following results on replicates: $s_p = 1.7$ mmol m^{-3}, $\nu = 89$ (2 replicate pairs with differences of 22 mmol m^{-3} were removed by Chauvenet's criterion).

2.6 Nutrients

Samples for nutrient determination were collected into twice rinsed glass and polystyrene test tubes (2 glass and 2 polystyrene tubes per sample), frozen in an upright position, and stored in a freezer until analysis. Two additional plastic tubes were filled, 100 μl of 10N H_2SO_4 was added and the samples were stored at 4°C in the dark. Samples were acidified to evaluate this storage method for silicate.

Nutrient determinations were performed using Technicon Autoanalyzer II components. Reactive silicate and nitrate plus nitrite were determined according to Technicon Industrial Methods No. 186-72 W and 158-71 W respectively, and soluble orthophosphate was determined using a modified Technicon method [*Brynjolfson*, 1973]. Sagami standards were used to calibrate secondary standards which were prepared daily in 30.5°/$_{oo}$ NaCl solutions. In addition, 21% of the frozen samples were relabelled and analyzed as blind replicates.

Phosphate and nitrate concentrations were determined on samples thawed and analyzed immediately. The silicate concentrations were determined on frozen samples thawed for 24 hours [see *Macdonald et al*, 1986] before analysis. The acidified samples were analyzed on board the *John. P. Tully* within 2 days of sampling[2]. Turbidities were determined for 20% of the samples designated as a sample to be verified (i.e. borderline turbidity for filtration); random selections were also made. Corrections were made as required.

The precision of the methods based on blind and open replicates was found to be: silicate (frozen), $s_p = 0.78$ mmol m^{-3}, $\Sigma\nu = 180$; silicate (acidified), $s_p = 0.35$ mmol m^{-3}, $\Sigma\nu = 192$; phosphate, $s_p = 0.09$ mmol m^{-3}, $\Sigma\nu = 209$; nitrate, $s_p = 0.25$ mmol m^{-3}, $\Sigma\nu = 188$.

2.7 Total Suspended Solids

Sampling and analytical methods are detailed in an Ocean Chemistry protocol [*Macdonald et al.*,1983] and are described briefly below. All subsampling and filtration work was carried out on the ship.

Following gentle shaking of the polyethylene carboy, volumes of water ranging from 1 l to 4 l were subsampled into 2 l polybottles. As much water as possible (depending on particle loading) was then filtered through a pre- washed and pre-weighed 0.45 μm, 47 mm Nuclepore filter using glass castles mounted on a vacuum manifold. The volume filtered was recorded to the nearest 10 ml. After the filtered water had passed through the filter, it was rinsed with three 10 ml portions of pH8

[2]Silicate data reported in the appendices are from the acidified samples.

Milli-Q water followed by three small rinses around the filter perimeter after the castle had been removed. Blanks were prepared by periodically placing a second filter underneath. All filters were stored in acid-cleaned petri slides in a freezer and returned to IOS for dry-weight determination.

Filters were dried at 50°C overnight and weighed on a Mettler M3 autobalance to the nearest 0.001 mg. Calibration was carried out with an internal 100 mg weight. The instrument is linear, and calibration does not appear to contribute significantly to error; static electricity is a major weighing problem, and this was controlled with a Po α-source static eliminator. Samples with high particulate loads also tended to absorb water during weighing; we therefore transferred the filters from the desiccator to the balance quickly and took the first stable weight; this potential source of error is mitigated by the absolute weight of the problematic samples. For the data reported here, the blanks were found to be 0.043 mg, s=0.022, n=24. These blanks appeared to be relatively insensitive to the volume filtered (generally 2 l or 4 l) and indicate an error of about ±0.01 - 0.02 mg l^{-1} depending on volume filtered. This translates to an error of about ±25% for the lowest-particulate samples (0.04 - 0.08 mg l^{-1} range). For samples where the particulate concentration was higher than about 0.10 mg l^{-1}, the relative error was less; CV_p = 6.9%, ν = 21, where the pooled coefficient of variation is:

$$CV_p = \sqrt{\Sigma[\nu_i(s_i/\overline{X} \times 100\%)^2]/\Sigma\nu_i}$$

Repeatability of deep water measurements where particle concentrations are very low suggest that the precision of the method, including errors of sampling, sample handling, blank correction and weighing, is certainly less than ±0.05 mg/l (1 σ).

Absolute accuracy of the balance has been established to be better than ±0.01 mg by reference to the class 5 NBS weights; absolute accuracy of the method of filtration is defined by the operation of passing through a 0.45 μm filter [see *Brewer et al.*, 1976].

2.8 Particulate Organic Carbon and Nitrogen

Water samples (1-8 l–1 l for turbid, nearshore water, 4-8 l for clear, offshore water) were vacuum filtered in the ship's laboratory ($\leq$ 150 mm Hg) through single 47 mm diameter pre-combusted (500°C, 1hr) Whatman GF/F glassfiber filters. The residue on each filter was rinsed with 10 ml, 3% NaCl solution. Filters were then stored inside pre-combusted aluminum foil in a deep freezer (-20°C) and returned to IOS for analysis. Blank filters were prepared by treating them like sample filters without filtering a water sample. Organic carbon and nitrogen on the filters were analyzed using a Perkin-Elmer Model 240 elemental analyzer after the filter had been treated with concentrated HCl vapour in a closed container for 8 hours to remove inorganic carbon. Blanks were equivalent to 0.0 μg N/l (s=0.6 μg N/l, n=6), and 9.2 μg C/l (s= 1.2 μg/l, n=6) for a one l sample [see also *Iseki et al.*,1986]. Acetanilide was used to standardize the instrument for carbon and nitrogen. Precision for the method was estimated from the regression on the calibration curve, and the standard deviation around the blanks.

2.9 Chlorophyll *a*

Water samples (0.25-0.50 l) were filtered through 24-mm diameter Whatman GF/C glass fiber filters. Approximately 1 ml of 1% $MgCO_3$ solution was added to the samples just before filtration was complete. The inside of the filtration funnel was rinsed with about 10 ml of filtered sea water while continuing the filtration. After filtration, the filters were folded in half, placed in filter paper folded into quarters, labelled, and stored frozen in a dark bottle containing silica- gel in a deep

freezer. At IOS chlorophyll *a* was determined fluorometrically with a Turner Design fluorometer [*Strickland and Parsons*, 1972].

Blanks were estimated from deep samples (where chlorophyll concentrations are low) to be less than 0.02 mg m^{-3} (s=0.01 mg m^{-3} n=10), and pooled standard deviation of replicates less than 0.04 mg m^{-3} (n=12).

3 References

Brewer, P.G., D.W. Spencer, P.F. Biscaye, A. Hanley, P.L. Sachs, C.L. Smith, S. Kadar, and J. Fredericks, 1976. The distribution of particulate matter in the Atlantic Ocean. *Earth Planetary Science Letters*, **32**, 393-402.

Brynjolfson, S.J., 1973. A Modification of the Technicon methodology for the determination of orthophosphate in sea water. Paper presented at *Water Resources Service*, Vancouver, B.C.

Carpenter, J.H., 1965. The Chesapeake Bay Institute technique for the Winkler dissolved oxygen method, *Limnol. Oceanogr.*, **10**, 141-3.

Huggett, W.S. and A. Mortimer, 1971. Observations obtained on a Magnavox Satellite Navigation Receiver in high latitudes. *Pacific Marine Science Report*, **71-4**, 13pp.

Iseki, K., R.W. Macdonald, and E. Carmack, 1987. Distribution of particulate matter in the southeastern Beaufort Sea in late summer; *Proceedings of Symposium on Polar Biology*, National Institute of Polar Research, *1*, 35-46

Lewis, E.L. and R.G. Perkin, 1978. The practical salinity scale 1978: conversion of existing data. *Deep Sea Res.*, **28A**, 307-328.

Macdonald, R.W., M. O'Brien, D.M. Macdonald, and V. Scott, 1983. A manual for the determination of particulates in sea water by filtration at Ocean Chemistry; *Unpublished Manuscript, 11pp.*

Macdonald, R.W., F. McLaughlin, and C.S. Wong, 1986. The storage of reactive silicate samples by freezing. *Limnol. Oceanogr.*, **31**, 1139-1142.

Strickland, J.D.H. and T.R. Parsons, 1972. A practical handbook of sea water analysis; *Bulletin* **167**, Fisheries Research Board of Canada, Ottawa, 310 pp.

4 APPENDIX 1; DATA TABLES

STATION: 1-5 DATE: 31/07/87 TIME: 1810 (Z+6)
DEPTH: 5 m
LATITUDE: 69 32.5 N LONGITUDE: 133 17.5 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
3	501		17.86		302		0.11	23.7	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
3	501	251.9		37.1		0.796				

STATION: 2-5 DATE: 01/08/87 TIME: 1600 (Z+6)
DEPTH: 6 m
LATITUDE: 69 40.0 N LONGITUDE: 133 19.5 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0.5	506		24.79		301		0.31	12.8	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0.5	506	964.0		111.0		1.259				33.31

STATION: 3-5 DATE: 01/08/87 TIME: 1250 (Z+6)
DEPTH: 10 m
LATITUDE: 69 47.1 N LONGITUDE: 133 21.0 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0.5	502		24.02		307		0.38	15.3	
3	503		23.96		307		0.58	15.3	
6	504		26.18		308		0.93	11.6	
8.5	505		28.20		308		0.97	11.1	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0.5	502	190.5		28.0		0.761				6.28
3	503	213.3		22.8		1.061				6.69
6	504	181.7		25.1						6.18
8.5	505	350.4		44.1		0.588				20.65

STATION: 4-5 DATE: 02/08/87 TIME: 1250 (Z+6)
DEPTH: 16 m
LATITUDE: 69 53.5 N LONGITUDE: 133 24.7 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0.5	507		23.74		311		0.30	14.7	
3	508		25.05		312		0.32	12.6	
6	509		28.60		312		0.42	5.2	
10	510		31.30		376		0.80	3.0	
14	511		31.62		371		0.69	3.5	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0.5	507	107.2		16.9		0.398				1.87
3	508	119.1		21.0		0.450				2.42
6	509	64.7		10.3		0.459				0.93
10	510	146.0		22.9		0.265				4.73
14	511	192.3		27.7						6.64

STATION: 5-5 DATE: 03/08/87 TIME: 0909 (Z+6)
DEPTH: 25 m
LATITUDE: 70 01.0 N LONGITUDE: 133 26.0 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0.5	512		29.32		309		0.42	3.1	
3	513		29.31		310		0.38	3.1	
6	514		29.67		312		0.38	2.3	
10	515		30.12		330		0.48	2.0	
15	516		31.81		378		0.77	1.7	
20	516.5								
25	517		31.90		341		1.06	6.1	0.5

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0.5	512	45.9		8.1		0.154				0.12
3	513	44.7		7.5		0.137				0.16
6	514	51.5		8.7		0.135				0.15
10	515	44.8		7.8		0.190				0.26
15	516	69.0		13.7		0.346				0.26
20	516.5	131.5		21.2						
25	517	151.7		28.4		1.801				3.15

STATION: 7-5 DATE: 06/08/87 TIME: 1120 (2+6)
DEPTH: 51 m
LATITUDE: 70 15.8 N LONGITUDE: 133 39.2 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
1	532		29.23		302		0.40	2.6	
5	533		29.27		303		0.43	2.6	
10	534		29.43		303		0.38	2.5	
15	535		31.21		386		0.48	1.4	
20	536		31.40		407		0.82	2.7	
30	537		31.66		374		0.84	4.8	0.3
45	538		32.06		300		1.12	11.9	2.8

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
1	532	35.7		6.5		0.103				0.09
5	533	48.3		9.2		0.101				0.08
10	534	48.9		8.9		0.110				0.25
15	535	41.3		7.5		0.178				0.08
20	536	35.3		7.1		0.206				0.06
30	537	57.1		11.1		0.828				0.15
45	538	165.2		28.3		0.025				0.43

STATION: 8-5

DATE: 05/08/87
DEPTH: 59 m
LATITUDE: 70 31.1 N

TIME: 1640 (Z+8)
LONGITUDE: 133 56.6 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0.5	531		28.96		302		0.48	2.7	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0.5	531	48.6		8.3		0.100				0.07

STATION: 9-5

DATE: 05/08/87
DEPTH: 61 m
LATITUDE: 70 44.2 N

TIME: 1035 (Z+6)
LONGITUDE: 134 09.9 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0.5	530		28.39		301		0.44	3.4	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0.5	530	53.4		8.3		0.100				0.10

STATION: 10-5 DATE: 04/08/87 TIME: 0945 (2+6)
DEPTH: 210 m
LATITUDE: 70 56.8 N LONGITUDE: 134 35.7 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
1	518		27.67		302		0.39	2.6	
4	519		27.64		303		0.40	2.5	
10	520		29.21		368		0.59	2.1	
15	521		30.98		399		0.85	3.0	
20	522		30.93		407		0.83	2.7	
30	523		31.31		367		0.85	3.1	
50	524		31.72		398		0.83	7.7	1.3
75	525		32.22		337		0.98	20.1	8.9
125	527		32.77		292		1.87	31.4	14.0
150	529		33.54		263		1.85	35.7	14.5
200	528		34.54		262		1.21	18.9	16.5

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
1	518	46.3		8.2		0.128				0.14
4	519	46.6		8.5		0.118				0.11
10	520	34.5		6.4		0.202				0.07
15	521	34.4		6.4		0.167				0.09
20	522	32.6		6.0		0.190				0.07
30	523	23.2		4.7		0.161				0.07
50	524	53.4		5.1		0.134				0.12
75	525	35.2		4.4		0.034				0.12
125	527	34.7		5.4		0.101				0.40
150	529	24.5		2.4		0.029				0.18
200	528	35.6		4.0		0.018				0.14

STATION: 13-5 DATE: 30/08/87 TIME: 0945 (Z+6)
DEPTH: 15 m
LATITUDE: 69 49.0 N LONGITUDE: 135 50.1W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	657	6.54	25.93	20.34	324		0.39	9.5	
12	658	5.27	27.69	21.86	321		0.59	8.8	
14	659	4.61	29.38	23.26	324		0.69	8.5	0.7

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	657	87.0		14.3		0.612				0.59
12	658									
14	659									356.95

STATION: 14-5

DATE: 30/08/87 TIME: 1132 (Z+6)
DEPTH: 23 m
LATITUDE: 69 55.0N LONGITUDE: 135 56.2W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	660	6.11	26.46	20.80	329		0.46	9.1	
16	661	3.09	30.56	24.34	351		0.81	6.9	0.9

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	660	83.2		13.0		0.478				0.42
16	661									

STATION: 15-5 DATE: 30/08/87 TIME: 1314 (Z+6)
DEPTH: 34 m
LATITUDE: 70 01.2N LONGITUDE: 136 05.6W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	662	5.19	28.11	22.20	335		0.55	7.3	
10	663	5.36	28.11	22.18	336		0.59	7.8	
25	664	1.89	31.15	24.89	378		0.83	4.3	0.4
30	665	1.89	31.15	24.89	378		0.79	4.2	0.4

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	662	63.1		8.6		0.536				0.24
10	663									23.38
25	664									24.07
30	665									

STATION: 16-5 DATE: 30/08/87 TIME: 1515 (Z+6)
DEPTH: 48 m
LATITUDE: 70 11.2N LONGITUDE: 136 15.2W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	666	5.99	27.92	21.97	334		0.54	7.3	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	666	74.9		10.0		0.398				0.23

STATION: 17-5 DATE: 30/08/87 TIME: 1748 (Z+6)
DEPTH: 59 m
LATITUDE: 70 22.1N LONGITUDE: 136 28.2W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	667	5.48	27.96	22.05	338		0.57	7.3	
20	668	5.20	31.16	24.61	416		0.84	3.8	
30	669	-1.12	31.54	25.35	417		0.89	3.7	
35	670	-1.44	31.69	25.48	411		0.86	6.6	0.6
45	671	-0.59	32.08	25.78	356		1.09	10.4	2.9

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	667	61.8		9.4		0.421				
20	668									
30	669									
35	670									
45	671									4.35

STATION: 18-5

DATE: 30/08/87
DEPTH: 650 m
LATITUDE: 70 32.8N

TIME: 2212 (Z+6)
LONGITUDE: 136 42.5W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	672	6.07	27.61	21.71	331		0.52	7.0	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	672	54.0		8.3		0.248				0.15

STATION: 19-5 DATE: 27/08/87 TIME: 1634 (Z+6)
DEPTH: 16 m
LATITUDE: 69 05.3 N LONGITUDE: 137 45.7 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	653	10.14	19.44	14.81	325		0.40	22.4	0.6
5	654	6.86	27.68	21.67	323		0.60	7.3	
10	655	7.13	28.35	22.17	331		0.54	5.8	
13	656	7.03	28.52	22.32	325		0.69	6.5	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	653	244.7		38.0		1.191				6.28
5	654	129.7		19.9		0.673				
10	655	105.6		16.7		0.669				2.46
13	656	109.0		16.9		0.553				1.57

STATION: 20-5 DATE: 27/08/87 TIME: 1456 (Z+6)
DEPTH: 32 m
LATITUDE: 69 11.1 N LONGITUDE: 137 50.6 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	652	8.35	23.93	18.55	323		0.39	14.0	0.1

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	652	138.9		23.5		0.926				2.42

STATION: 21-5 DATE: 27/08/87 TIME: 1331 (Z+6)
DEPTH: 38 m
LATITUDE: 69 16.6 N LONGITUDE: 137 55.4 W

DEPTH	SAMPLE	TEMP.	SALINITY	GAMMA	OXYGEN	O16/O18	PHOSPHATE	SILICATE	NITRATE
m	#	deg C	X10^3	kg/m3	mmol/m3		mmol/m3	mmol/m3	mmol/m3
0	651	8.06	26.64	20.71	325		0.45	8.5	

DEPTH	SAMPLE	POC CAST 1	POC CAST 2	PON CAST 1	PON CAST 2	CHLa CAST 1	CHLa CAST 2	PHEO CAST 1	PHEO CAST 2	TSS
m	#	ug/L	ug/L	ug/L	ug/L	mg/m3	mg/m3	mg/m3	mg/m3	mg/L
0	651	90.9		13.9		0.461				

STATION: 22-5 DATE: 27/08/87 TIME: 1207 (Z+6)
DEPTH: 51 m
LATITUDE: 69 22.0 N LONGITUDE: 138 02.2 W

DEPTH	SAMPLE	TEMP.	SALINITY	GAMMA	OXYGEN	O16/O18	PHOSPHATE	SILICATE	NITRATE
m	#	deg C	X10^3	kg/m3	mmol/m3		mmol/m3	mmol/m3	mmol/m3
0	650	7.97	28.10	21.86	319		0.52	7.0	

DEPTH	SAMPLE	POC CAST 1	POC CAST 2	PON CAST 1	PON CAST 2	CHLa CAST 1	CHLa CAST 2	PHEO CAST 1	PHEO CAST 2	TSS
m	#	ug/L	ug/L	ug/L	ug/L	mg/m3	mg/m3	mg/m3	mg/m3	mg/L
0	650	55.2		7.6		0.219				0.17

STATION: 23-5 DATE: 27/08/87 TIME: 0928 (Z+6)
DEPTH: 69 m
LATITUDE: 69 23.2 N LONGITUDE: 138 08.0 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	646	7.49	29.03	22.66	320		0.53	5.8	
10	647	7.34	29.49	23.04	322		0.54	5.3	
30	648	6.17	30.39	23.89	335		0.59	3.8	
55	649	2.57	30.88	24.63	384		0.63	3.8	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	646	73.6		10.9		0.277				0.52
10	647	91.5		12.1		0.398				1.61
30	648	75.9		11.0		0.467				0.98
55	649	85.8		11.7		0.386				

STATION: 24-6 DATE: 27/08/87 TIME: 0527 (Z+6)
DEPTH: 138 m
LATITUDE: 69 38.5 N LONGITUDE: 138 19.0 W

DEPTH	SAMPLE	TEMP.	SALINITY	GAMMA	OXYGEN	O16/O18	PHOSPHATE	SILICATE	NITRATE
m	#	deg C	X10^3	kg/m3	mmol/m3		mmol/m3	mmol/m3	mmol/m3
0	645		27.25		314		0.38	9.3	

DEPTH	SAMPLE	POC CAST 1	POC CAST 2	PON CAST 1	PON CAST 2	CHLa CAST 1	CHLa CAST 2	PHEO CAST 1	PHEO CAST 2	TSS
m	#	ug/L	ug/L	ug/L	ug/L	mg/m3	mg/m3	mg/m3	mg/m3	mg/L
0	645	56.1		9.4		0.219				0.14

STATION: 26-5 DATE: 26/08/87 TIME: 1935 (2+6)
DEPTH: 400 m
LATITUDE: 70 11.0 N LONGITUDE: 138 53.0

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	644	7.41	27.46	21.44	323		0.42	8.2	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	644	57.4		8.6		0.156				0.20

STATION: 28-5

DATE: 21/08/87
DEPTH: 16 m
LATITUDE: 70 12.4 N

TIME: 1600 (Z+6)
LONGITUDE: 131 05.0 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	590		32.18		312		0.58	6.9	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	590	397.0		54.6		0.842				19.19

STATION: 29-5 DATE: 21/08/87 TIME: 1038 (Z+6)
DEPTH: 17 m
LATITUDE: 70 18.4 N LONGITUDE: 130 57.2 W

DEPTH	SAMPLE	TEMP.	SALINITY	GAMMA	OXYGEN	O16/O18	PHOSPHATE	SILICATE	NITRATE
m	#	deg C	X10^3	kg/m3	mmol/m3		mmol/m3	mmol/m3	mmol/m3
1	585	4.85	32.15	25.43	351		0.67	1.3	
10	586	3.49	32.28	25.67	327		0.82	8.1	
13	587	3.40	32.28	25.68	329		1.05	10.6	
15	588	3.38	32.28	25.68	332		1.10	8.2	

DEPTH	SAMPLE	POC CAST 1	POC CAST 2	PON CAST 1	PON CAST 2	CHLa CAST 1	CHLa CAST 2	PHEO CAST 1	PHEO CAST 2	TSS
m	#	ug/L	ug/L	ug/L	ug/L	mg/m3	mg/m3	mg/m3	mg/m3	mg/L
1	585	80.9		11.2		0.386				0.60
10	586	484.2	342.0	59.1	43.7	1.395				23.78
13	587	419.3		54.1		0.969				18.36
15	588	449.2		58.9		0.945				22.11

STATION: 30-5

DATE: 21/08/87
DEPTH: 23 m
LATITUDE: 70 23.0 N

TIME: 1400 (Z+6)
LONGITUDE: 130 59.3 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	589		30.90		352		0.61	1.4	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	589	58.3		10.0		0.305				0.28

STATION: 31-5 DATE: 21/08/87 TIME: 0045 (Z+6)
DEPTH: 32 m
LATITUDE: 70 28.0 N LONGITUDE: 131 10.4 W

DEPTH	SAMPLE	TEMP.	SALINITY	GAMMA	OXYGEN	O16/O18	PHOSPHATE	SILICATE	NITRATE
m	#	deg C	X10^3	kg/m3	mmol/m3		mmol/m3	mmol/m3	mmol/m3
0	584		29.27		337		0.58	2.5	

DEPTH	SAMPLE	POC CAST 1	POC CAST 2	PON CAST 1	PON CAST 2	CHLa CAST 1	CHLa CAST 2	PHEO CAST 1	PHEO CAST 2	TSS
m	#	ug/L	ug/L	ug/L	ug/L	mg/m3	mg/m3	mg/m3	mg/m3	mg/L
0	584	46.4		8.8		0.224				0.14

STATION: 32-5

DATE: 20/08/87 TIME: 2315 (2+6)
DEPTH: 38 m
LATITUDE: 70 38.5 N LONGITUDE: 131 22.1 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	583		28.05		318		0.39	2.8	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	583	55.6		10.5		0.123				0.18

STATION: 33-5 DATE: 20/08/87 TIME: 1000 (Z+6)
DEPTH: 55 m
LATITUDE: 70 53.5N LONGITUDE: 131 42.1W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O18/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	577	8.07	28.87	22.45	311		0.28	1.7	
10	578	7.85	28.88	22.49	313		0.32	1.8	
20	579	2.10	31.27	24.98	373		0.58	0.9	
30	580	-0.20	31.45	25.25	420		0.64	2.0	
40	581	0.71	31.90	25.57	418		0.71	1.6	
50	582	-0.66	31.32	25.16	327		0.77	2.4	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	577	49.1		7.8		0.154				0.10
10	578	54.9		9.4		0.130				0.11
20	579	41.9		7.2		0.215				0.08
30	580	31.5		6.0		0.169				0.06
40	581	58.9		8.6		0.461				0.11
50	582									

STATION: 34-5

DATE: 19/08/87 TIME: 2200 (Z+6)
DEPTH: 77 m
LATITUDE: 71 09.0N LONGITUDE: 132 00.1W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	576	7.57	29.84	23.28	327		0.58	3.0	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	576	65.3		9.1		0.127				0.14

STATION: 35-5 DATE: 19/08/87 TIME: 1048 (Z+6)
DEPTH: 460 m
LATITUDE: 71 24.5N LONGITUDE: 132 20.0W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	563	7.38	29.74	23.23	317		0.66	3.6	
10	564	7.16	30.11	23.55	320		0.55	3.2	
20	565	0.37	31.27	25.08	406		0.81	4.7	
30	566	-0.35	31.61	25.39	416		0.80	5.1	
50	567	-1.28	31.82	25.58	414		0.89	7.5	1.0
75	568	-1.41	32.29	25.97	334		1.26	21.7	8.4
100	569	-1.47	32.63	26.24	304		1.75	31.2	13.8
125	570	-1.50	32.87	26.44	291		1.96	37.7	15.9
150	571	-1.51	33.13	26.66	280		2.00	41.8	17.3
200	572	-1.47	33.99	27.35	246		1.68	34.7	16.7
250	573	-0.14	34.59	27.78	268		1.07	18.4	14.5
300	574	0.08	34.70	27.86	281		0.91	14.6	12.2
400	575	0.38	34.83	27.95	292		0.84	10.8	13.1

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	563	65.0		8.3		0.134				0.10
10	564	78.7		8.0		0.164				0.13
20	565	35.1		5.0		0.080				0.05
30	566	54.6		8.1		0.216				0.09
50	567	61.7	65.2	9.3	8.7	0.223				0.10
75	568	48.9		4.4		0.126				0.20
100	569	30.1		2.9		0.054				0.04
125	570	21.3		2.2		0.029				0.05
150	571	22.3		2.0		0.027				0.05
200	572	28.6		3.1		0.019				0.06
250	573	25.3		4.4						0.07
300	574	17.2		2.2						0.06
400	575	23.2		2.7						0.10

STATION: 36-5 DATE: 23/8/87 TIME: 0814 (Z+6)
DEPTH: 14 m
LATITUDE: 70 26.6 N LONGITUDE: 128 38.0 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	601		29.90		335		0.65	2.8	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	601	65.5		11.6		0.294				0.48

STATION: 37-5

DATE: 23/8/87
DEPTH: 12 m
LATITUDE: 70 31.8 N

TIME: 0926 (Z+6)
LONGITUDE: 128 44.0 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	602	6.33	28.97	22.75	332		0.61	3.8	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	602	53.1		9.6		0.208				0.29

STATION: 38-5

DATE: 23/8/87 TIME: 1052 (2+6)
DEPTH: 16 m
LATITUDE: 70 37.0 N LONGITUDE: 128 50.0 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	603	2.97	31.03	24.72	355		0.82	3.1	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	603	76.1		13.9		0.278				0.22

STATION: 39-5 DATE: 23/8/87 TIME: 1405 (Z+6)
DEPTH: 22 m
LATITUDE: 70 42.2 N LONGITUDE: 128 55.0 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	604	7.33	28.45	22.23	325		0.53	4.2	
5	605	2.00	31 60	25.25	395		0.72	1.7	
10	606	0.46	32.45	26.03	340		0.92	2.8	
17	607	0.44	32.46	26.03	334		1.08	2.9	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	604	59.1		9.9		0.202				
5	605	64.5		11.3		0.362				0.55
10	606	164.8		25.8		0.756				3.54
17	607	185.6		27.5		0.736				4.86

STATION: 40-5 DATE: 23/08/87 TIME: 1547 (2+6)
DEPTH: 21 m
LATITUDE: 70 47.0 N LONGITUDE: 129 02.5 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	608	7.36	28.63	22.36	322		0.67	4.0	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	608	64.3		10.5		0.225				0.18

STATION: 41-5 DATE: 23/08/87 TIME: 1916 (2+6)
DEPTH: 32 m
LATITUDE: 70 57.4 N LONGITUDE: 129 16.3 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	609	7.01	29.00	22.70	324		0.68	4.1	
10	610	6.03	29.31	23.06	337		0.72	3.9	
15	611	0.48	32.17	25.80	422		0.84	1.4	
25	612	0.05	32.53	26.11	426		0.90	4.0	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	609	52.3		8.6		0.087				0.17
10	610	64.6		9.9		0.169				0.17
15	611	96.2		13.6		0.222				0.35
25	612	159.6		27.0		0.694				3.01

STATION: 43-5

DATE: 25/08/87 TIME: 0030 (Z+6)
DEPTH: 196 m
LATITUDE: 71 31.6 N LONGITUDE: 130 0.7 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	621	6.68	29.60	23.21	322		0.74	4.2	
10	622	3.30	30.77	24.49	387		0.85	3.8	
20	623	0.53	31.25	25.06	401		0.71	4.5	
30	624	-0.36	31.48	25.28	413		0.84	4.8	
50	625	-1.15	31.82	25.58	424		0.82	6.3	0.4
75	626	-1.39	32.27	25.95	274		1.39	21.7	9.1
100	627	-1.46	32.65	26.27	300		1.58	31.5	13.9
125	628	-1.50	32.89	26.45	286		1.86	36.8	15.6
150	629	-1.48	33.17	26.69	278		1.86	41.0	17.1
175	630	-1.33	33.41	26.88			1.94	38.7	16.6

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	621									
10	622									
20	623									
30	624									
50	625									
75	626									
100	627									
125	628									
150	629									
175	630									

STATION: A1-5 DATE: 15/08/87 TIME: 0210 (Z+6)
DEPTH: 3300 m
LATITUDE: 72 35.9 N LONGITUDE: 143 30.1 W

DEPTH	SAMPLE	TEMP.	SALINITY	GAMMA	OXYGEN	O16/O18	PHOSPHATE	SILICATE	NITRATE
m	#	deg C	X10^3	kg/m3	mmol/m3		mmol/m3	mmol/m3	mmol/m3
0	539	7.83	23.89	18.58	322		0.23	13.4	0.3
10	540	0.60	30.09	24.12	417		0.75	5.3	
20	541	-1.10	30.93	24.86	421		0.57	4.6	
30	542	-1.46	31.35	25.21	427		0.79	4.5	
50	543	-1.56	31.69	25.48	403		0.85	8.0	2.0
75	544	-1.41	32.37	26.03	329		1.21	23.9	9.8
100	545	-1.47	32.61	26.23	299		1.82	31.7	14.0
150	546	-1.51	33.13	26.65	292		2.01	38.9	16.2
200	547	-1.19	33.82	27.20	274		1.78	33.5	15.7
250	548	-0.40	34.49	27.71	270		1.01	19.1	14.2
300	549	0.01	34.69	27.85	284		0.88	13.3	12.8
350	550	0.27	34.76	27.90	292		0.75	10.7	12.1
400	551	0.36	34.80	27.92	297		0.84	9.3	12.8
500	552	0.44	34.84	27.95	301		0.95	8.2	13.2
600	553	0.46	34.86	27.97	308		0.94	8.0	13.0
800	554	0.27	34.88	28.00	309		1.02	7.8	12.8
1000	555	0.04	34.89	28.02	311		0.99	8.0	12.9
1250	556	-0.17	34.91	28.04	312		0.96	8.6	13.0
1500	557	-0.31	34.93	28.06	311		0.89	9.6	12.9
1750	558	-0.38	34.93	28.07	308		0.88	10.7	14.1
2000	559	-0.42	34.94	28.08	304		0.89	11.9	14.5
2250	560	-0.41	34.95	28.08	301		0.99	12.8	14.8
2500	561	-0.39	34.95	28.09	301		0.97	13.4	15.0
3000	562	-0.32	34.95	28.09	294		0.89	14.8	14.9

STATION: A1-5 DATE: 15/08/87 TIME: 0210 (Z+6)
DEPTH: 3300 m
LATITUDE: 72 35.9 N LONGITUDE: 143 30.1 W

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	539	66.3		10.1		0.190				0.14
10	540	61.5		9.4		0.340				
20	541	35.7		5.8		0.179				
30	542	33.5		4.9		0.323				0.07
50	543	17.8		2.2		0.161				
75	544	13.5		3.1		0.070				
100	545	17.7		1.7		0.017				
150	546	19.9		1.2		0.013				0.04
200	547	11.7		1.2		0.010				
250	548	16.4		1.5						
300	549	17.8		1.7						
350	550	20.1		1.4						
400	551	12.6		1.3						0.06
500	552	18.7		1.5						
600	553	12.8		1.3						
800	554	23.9		1.4						
1000	555	14.9		1.5						
1250	556	21.4		2.4						
1500	557	23.9		2.3						
1750	558	30.9		2.2						
2000	559	34.6		2.9						0.07
2250	560	23.1		1.1						
2500	561	24.7		2.1						
3000	562	50.4		1.8						

STATION: K1-5 DATE: 29/08/88 TIME: 0925 (Z+6)
DEPTH: 7 m
LATITUDE: 69 42.17N LONGITUDE: 133 09.0W

DEPTH	SAMPLE	TEMP.	SALINITY	GAMMA	OXYGEN	O16/O18	PHOSPHATE	SILICATE	NITRATE
m	#	deg C	X10^3	kg/m3	mmol/m3		mmol/m3	mmol/m3	mmol/m3
0	0								

DEPTH	SAMPLE	POC CAST 1	POC CAST 2	PON CAST 1	PON CAST 2	CHLa CAST 1	CHLa CAST 2	PHEO CAST 1	PHEO CAST 2	TSS
m	#	ug/L	ug/L	ug/L	ug/L	mg/m3	mg/m3	mg/m3	mg/m3	mg/L
0	0	976.2		105.8		3.536				

STATION: MB-5 DATE: 21/08/87 TIME: 2100 (2+6)
DEPTH: 13 m
LATITUDE: 70 05.9 N LONGITUDE: 131 09.5 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
3	591		29.39		304		0.49	6.0	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
3	591	373.6		50.8		0.669				19.07

STATION: SS1-5 DATE: 22/08/87 TIME: 1838 (Z+6)
DEPTH: 238 m
LATITUDE: 70 42.7 N LONGITUDE: 127 13.9 W

DEPTH	SAMPLE	TEMP.	SALINITY	GAMMA	OXYGEN	O16/O18	PHOSPHATE	SILICATE	NITRATE
m	#	deg C	X10^3	kg/m3	mmol/m3		mmol/m3	mmol/m3	mmol/m3
1	592	7.38	29.38	22.94	318		0.73	4.2	
7	593	7.37	29.41	22.97	318		0.75	4.2	
20	594	0.19	31.08	24.93	391		0.82	3.9	
30	595	-0.58	31.23	25.08	399		0.80	4.2	
50	596	-1.18	31.48	25.30	405		0.88	4.9	
81	597	-1.26	32.14	25.84	403		1.04	3.7	1.6
100	598	-1.33	32.35	26.02	322		1.31	22.0	9.1
150	599	-1.48	33.01	26.56	279		1.96	37.1	15.7
200	600	-0.93	33.93	27.28	245		1.69	35.1	16.6

DEPTH	SAMPLE	POC CAST 1	POC CAST 2	PON CAST 1	PON CAST 2	CHLa CAST 1	CHLa CAST 2	PHEO CAST 1	PHEO CAST 2	TSS
m	#	ug/L	ug/L	ug/L	ug/L	mg/m3	mg/m3	mg/m3	mg/m3	mg/L
1	592	33.4		6.2		0.082				0.18
7	593	38.3		7.3		0.102				0.10
20	594	41.0		6.0		0.049				0.26
30	595	61.3		9.6		0.276				0.14
50	596	67.9		10.0		0.171				0.35
81	597	49.9		7.6		0.404				0.09
100	598	69.0		8.0		0.062				0.36
150	599	30.4		3.8		0.021				0.11
200	600	40.1		4.8		0.035				0.12

STATION: SS2-5 DATE: 24/08/87 TIME: 1125 (Z+6)
DEPTH: 167 m
LATITUDE: 71 27.7 N LONGITUDE: 128 33.8 W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	613	6.88	29.43	23.05	320		0.57	3.6	
10	614	6.86	29.48	23.09	321		0.55	3.4	
20	615	1.10	31.09	24.89	423		0.77	4.2	
30	616	-0.26	31.64	25.41	424		0.79	3.9	
46	617	-1.12	32.01	25.73	401		0.78	6.6	1.3
75	618	-1.29	32.38	26.04	310		1.39	21.7	8.4
100	619	-1.39	32.61	26.23	295		1.77	29.0	12.1
150	620	-1.41	33.21	26.72	270		1.90	38.3	16.0

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	613	51.4		8.5		0.147				0.07
10	614	58.7		10.0		0.217				0.14
20	615	57.2		8.9		0.195				0.27
30	616	77.2		12.1		0.397				0.70
46	617	102.3		17.0		2.400				0.25
75	618	87.6	92.8	13.3	15.4	0.647				
100	619	64.1		8.3		0.248				0.38
150	620	43.2		5.7						0.20

STATION: SS4-5 DATE: 26/08/87 TIME: 1355 (Z+6)
DEPTH: 255 m
LATITUDE: 69 56.1 N LONGITUDE: 138 34.4 W

DEPTH	SAMPLE	TEMP.	SALINITY	GAMMA	OXYGEN	O16/O18	PHOSPHATE	SILICATE	NITRATE
m	#	deg C	X10^3	kg/m3	mmol/m3		mmol/m3	mmol/m3	mmol/m3
0	631		26.98		312		0.49	9.0	
10	632		27.32		316		0.48	8.5	
17	633	-0.17	30.99	24.88	415		0.80	4.7	
22	634	-0.49	31.31	25.15	406		0.80	5.4	
30	635	-0.75	31.45	25.27	411		0.78	4.2	
50	636	-1.14	31.73	25.51	399		0.85	7.4	1.2
75	637	-1.36	32.34	26.01	313		1.34	24.0	10.3
100	638	-1.36	32.57	26.19	311		1.56	28.4	11.5
125	639	-1.41	32.71	26.31	294		1.80	34.5	14.3
150	640	-1.36	32.90	26.46	301		1.65	32.6	12.7
175	641	-1.40	33.11	26.63	300		1.79	31.9	12.9
200	642	-1.36	33.47	26.92	269		1.88	39.7	16.6
225	643	-0.71	34.20	27.49	263		1.35	28.8	15.2

DEPTH	SAMPLE	POC CAST 1	POC CAST 2	PON CAST 1	PON CAST 2	CHLa CAST 1	CHLa CAST 2	PHEO CAST 1	PHEO CAST 2	TSS
m	#	ug/L	ug/L	ug/L	ug/L	mg/m3	mg/m3	mg/m3	mg/m3	mg/L
0	631	57.2		7.9		0.242				0.16
10	632	87.5		8.7		0.168				0.19
17	633	60.6		9.3		0.182				0.16
22	634									
30	635	42.5		6.2		0.231				0.17
50	636	86.7		13.9						0.31
75	637	33.2		4.4		0.278				0.09
100	638	40.3		4.3		0.219				0.14
125	639									
150	640	27.4		4.0		0.074				0.21
175	641	34.8		6.8		0.055				0.16
200	642	29.8		5.3		0.043				0.13
225	643									

STATION: O-6 DATE: 06/09/87 TIME: 1405 (Z+6)
DEPTH: 7 m
LATITUDE: 69 20.2N LONGITUDE: 133 54.7W

DEPTH	SAMPLE	TEMP.	SALINITY	GAMMA	OXYGEN	O16/O18	PHOSPHATE	SILICATE	NITRATE
m	#	deg C	X10^3	kg/m3	mmol/m3		mmol/m3	mmol/m3	mmol/m3
0	701		0.13		334		0.01	57.5	2.7

DEPTH	SAMPLE	POC CAST 1	POC CAST 2	PON CAST 1	PON CAST 2	CHLa CAST 1	CHLa CAST 2	PHEO CAST 1	PHEO CAST 2	TSS
m	#	ug/L	ug/L	ug/L	ug/L	mg/m3	mg/m3	mg/m3	mg/m3	mg/L
0	701	1556.2		174.0		1.153				120.95

STATION: 3-6 DATE: 06/09/87 TIME: 1026 (Z+6)
DEPTH: 10 m
LATITUDE: 69 47.2N LONGITUDE: 133 21.0W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
2	699	6.17	23.09	18.14	321		0.29	15.6	0.5
8	700	6.19	23.30	18.31	323		0.20	15.4	0.5

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
2	699	1572.4		157.5		0.865				106.19
8	700	2209.7		224.6		0.922				148.06

STATION: 4-6

DATE: 04/09/87
DEPTH: 35 m
LATITUDE: 69 53.5N

TIME: 1727 (2+6)
LONGITUDE: 133 24.2W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	696		21.39		325		0.53	20.0	0.4

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	696	245.0		32.2		1.538				8.63

STATION: 5-6 DATE: 04/09/87 TIME: 0557 (Z+6)
DEPTH: 28 m
LATITUDE: 70 00.1N LONGITUDE: 133 25.5W

DEPTH	SAMPLE	TEMP.	SALINITY	GAMMA	OXYGEN	O16/O18	PHOSPHATE	SILICATE	NITRATE
m	#	deg C	X10^3	kg/m3	mmol/m3		mmol/m3	mmol/m3	mmol/m3
0	693	6.32	21.40	16.79	333		0.36	18.1	0.5
10	0								
15	694	5.21	27.93	22.06	333		0.61	6.8	
25	695	-0.87	31.59	25.38	371		1.17	9.1	1.1

DEPTH	SAMPLE	POC CAST 1	POC CAST 2	PON CAST 1	PON CAST 2	CHLa CAST 1	CHLa CAST 2	PHEO CAST 1	PHEO CAST 2	TSS
m	#	ug/L	ug/L	ug/L	ug/L	mg/m3	mg/m3	mg/m3	mg/m3	mg/L
0	693	222.3		31.8		1.061				
10	0	106.7		16.1		0.804				
15	694	97.3		13.6		0.455				
25	695	169.3		22.9		0.969				5.67

STATION: 6-6 DATE: 03/09/87 TIME: 1600 (Z+6)
DEPTH: 41 m
LATITUDE: 70 07.7N LONGITUDE: 133 28.2W

DEPTH	SAMPLE	TEMP.	SALINITY	GAMMA	OXYGEN	O16/O18	PHOSPHATE	SILICATE	NITRATE
m	#	deg C	X10^3	kg/m3	mmol/m3		mmol/m3	mmol/m3	mmol/m3
0	691	6.28	26.26	20.63	326		0.52	10.3	
7	692	6.22	26.33	20.69	327		0.62	10.3	

DEPTH	SAMPLE	POC CAST 1	POC CAST 2	PON CAST 1	PON CAST 2	CHLa CAST 1	CHLa CAST 2	PHEO CAST 1	PHEO CAST 2	TSS
m	#	ug/L	ug/L	ug/L	ug/L	mg/m3	mg/m3	mg/m3	mg/m3	mg/L
0	691	179.4		24.0		0.969				
7	692									7.38

STATION: 7-6 DATE: 31/08/87 TIME: 2250 (2+6)
DEPTH: 50 m
LATITUDE: 70 14.4N LONGITUDE: 133 40.4W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
7	673	5.20	28.57	22.56	334		0.51	4.8	
22	674	-1.12	31.65	25.44	409		0.91	6.6	0.3
35	675	-1.10	31.80	25.56	398		0.85	7.9	0.9

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
7	673	85.3		12.2		0.265				0.23
22	674	118.6		19.5		1.084				2.07
35	675	229.7		37.3		1.433				3.20

STATION: 7-6A

DATE: 02/09/87
DEPTH: 53 m
LATITUDE: 70 16.0N

TIME: 2146 (Z+6)
LONGITUDE: 133 40.4W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
35	685	-0.98	31.96	25.69	355		1.07	13.5	4.0

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
35	685	205.7		33.5		4.980				5.04

STATION: 7-6B

DATE: 03/09/87
DEPTH: 40 m
LATITUDE: 70 17.7N

TIME: 0553 (Z+6)
LONGITUDE: 133 42.3W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	686	4.82	28.15	22.27	335		0.60	6.1	
8	687	-0.98	28.82	23.14	341		0.58	4.9	
25	688	-1.27	31.70	25.49	411		0.89	5.6	
35	689	-1.01	32.02	25.74	346		0.98	14.6	4.8
45	690	-1.03	32.05	25.76	342		1.04	14.6	4.5

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	686	59.5		8.7		0.265				0.19
8	687	52.6		8.4		0.265				0.18
25	688	45.6	48.9	8.4	9.0	0.322				0.30
35	689	183.6		32.1		5.073				2.78
45	690					4.811				3.85

STATION: 8-6 DATE: 02/09/87 TIME: 1818 (2+6)
DEPTH: 66 m
LATITUDE: 70 31.5N LONGITUDE: 133 43.2W

DEPTH	SAMPLE	TEMP.	SALINITY	GAMMA	OXYGEN	O16/O18	PHOSPHATE	SILICATE	NITRATE
m	#	deg C	X10^3	kg/m3	mmol/m3		mmol/m3	mmol/m3	mmol/m3
0	0								

DEPTH	SAMPLE	POC CAST 1	POC CAST 2	PON CAST 1	PON CAST 2	CHLa CAST 1	CHLa CAST 2	PHEO CAST 1	PHEO CAST 2	TSS
m	#	ug/L	ug/L	ug/L	ug/L	mg/m3	mg/m3	mg/m3	mg/m3	mg/L
0	0	68.7		10.0		0.254				

STATION: 9-6 DATE: 01/09/87 TIME: 1812 (Z+6)
DEPTH: 68 m
LATITUDE: 70 42.3N LONGITUDE: 134 07.5W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
5	676	1.07	29.45	23.58	358		0.75	4.7	
31	677	-1.27	31.80	25.57	396		0.84	7.1	1.1
55	678	-1.32	32.43	26.08	306		1.59	25.8	10.4

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
5	676	49.1		7.3		0.108				0.18
31	677	135.3		24.6		5.189				0.51
55	678	69.6		9.9		0.436				1.61

STATION: 9-6A

DATE: 02/09/87
DEPTH: 60 m
LATITUDE: 70 38.6N

TIME: 0656 (Z+6)
LONGITUDE: 134 31.3W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	679	3.46	29.16	23.19	345		0.67	4.6	
5	680	3.41	29.16	23.20	346		0.65	4.9	
10	681	3.39	29.19	23.22	347		0.65	4.7	
20	682	1.74	30.48	24.37			0.67	4.3	
37	683		31.95		370		1.10	10.7	3.8
55	684	-1.05	32.34	26.00			0.96	21.4	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	679	51.3		8.0		0.166				0.10
5	680	60.5		9.1		0.161				
10	681	60.3		8.9		0.169				0.17
20	682	55.3		7.4		0.154				0.19
37	683	168.3		35.0		4.554				0.49
55	684	122.6		16.5		0.357				2.65

STATION: M5-6

DATE: 07/09/87
DEPTH: 0 m
LATITUDE: 69 24.2N

TIME: 1415 (Z+6)
LONGITUDE: 133 36.7W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	704		0.29					57.4	2.7

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	704	1059.0		116.8		1.230				60.22

STATION: M10-6 DATE: 07/09/87 TIME: 1514 (Z+6)
DEPTH: 0 m
LATITUDE: 69 25.1N LONGITUDE: 133 28.3W

DEPTH	SAMPLE	TEMP.	SALINITY	GAMMA	OXYGEN	O16/O18	PHOSPHATE	SILICATE	NITRATE
m	#	deg C	X10^3	kg/m3	mmol/m3		mmol/m3	mmol/m3	mmol/m3
0.5	705		0.44				0.01	56.9	

DEPTH	SAMPLE	POC CAST 1	POC CAST 2	PON CAST 1	PON CAST 2	CHLa CAST 1	CHLa CAST 2	PHEO CAST 1	PHEO CAST 2	TSS
m	#	ug/L	ug/L	ug/L	ug/L	mg/m3	mg/m3	mg/m3	mg/m3	mg/L
0.5	705	1112.5		125.9		0.822				61.54

STATION: M12-6 DATE: 07/09/87 TIME: 1600 (2+6)
DEPTH: 0 m
LATITUDE: 69 26.8N LONGITUDE: 133 21.4W

DEPTH	SAMPLE	TEMP.	SALINITY	GAMMA	OXYGEN	O16/O18	PHOSPHATE	SILICATE	NITRATE
m	#	deg C	X10^3	kg/m3	mmol/m3		mmol/m3	mmol/m3	mmol/m3
0.5	706		2.10				0.01	53.9	

DEPTH	SAMPLE	POC CAST 1	POC CAST 2	PON CAST 1	PON CAST 2	CHLa CAST 1	CHLa CAST 2	PHEO CAST 1	PHEO CAST 2	TSS
m	#	ug/L	ug/L	ug/L	ug/L	mg/m3	mg/m3	mg/m3	mg/m3	mg/L
0.5	706	2916.4		114.5		0.776				30.91

STATION: M15-6

DATE: 07/09/87 TIME: 1708 (Z+6)
DEPTH: 0 m
LATITUDE: 69 27.8N LONGITUDE: 133 18.3W

DEPTH	SAMPLE	TEMP.	SALINITY	GAMMA	OXYGEN	O16/O18	PHOSPHATE	SILICATE	NITRATE
m	#	deg C	X10^3	kg/m3	mmol/m3		mmol/m3	mmol/m3	mmol/m3
0.5	707		3.98				0.04	51.0	2.4
3	708		21.33				0.18	21.4	1.3

DEPTH	SAMPLE	POC CAST 1	POC CAST 2	PON CAST 1	PON CAST 2	CHLa CAST 1	CHLa CAST 2	PHEO CAST 1	PHEO CAST 2	TSS
m	#	ug/L	ug/L	ug/L	ug/L	mg/m3	mg/m3	mg/m3	mg/m3	mg/L
0.5	707	416.3		49.8		0.270				21.36
3	708	788.3		92.3		0.502				38.67

STATION: M16-6 DATE: 07/09/87 TIME: 1850 (2+6)
DEPTH: 0 m
LATITUDE: 69 29.0N LONGITUDE: 133 15.2W

DEPTH	SAMPLE	TEMP.	SALINITY	GAMMA	OXYGEN	O16/O18	PHOSPHATE	SILICATE	NITRATE
m	#	deg C	X10^3	kg/m3	mmol/m3		mmol/m3	mmol/m3	mmol/m3
0	709		5.49				0.03	48.9	2.6

DEPTH	SAMPLE	POC CAST 1	POC CAST 2	PON CAST 1	PON CAST 2	CHLa CAST 1	CHLa CAST 2	PHEO CAST 1	PHEO CAST 2	TSS
m	#	ug/L	ug/L	ug/L	ug/L	mg/m3	mg/m3	mg/m3	mg/m3	mg/L
0	709	394.7		48.7		0.399				19.39

STATION: M17-6 DATE: 07/09/87 TIME: 1900 (2+6)
DEPTH: 0 m
LATITUDE: 69 30.0N LONGITUDE: 133 12.3W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	710		6.00				0.03	47.8	2.8

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	710	428.4		53.4		0.942				16.64

STATION: M18-6

DATE: 07/09/87
DEPTH: 0 m
LATITUDE: 69 31.4N

TIME: 1914 (Z+6)
LONGITUDE: 133 08.2W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O18/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0.5	711		9.28				0.05	42.5	

DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0.5	711	796.2		129.1		0.616				15.95

STATION: P6-6 DATE: 05/09/87 TIME: 1816 (2+6)
DEPTH: 24 m
LATITUDE: 69 59.0N LONGITUDE: 133 35.3W

DEPTH	SAMPLE	TEMP.	SALINITY	GAMMA	OXYGEN	O18/O18	PHOSPHATE	SILICATE	NITRATE
m	#	deg C	X10^3	kg/m3	mmol/m3		mmol/m3	mmol/m3	mmol/m3
3	697	5.83	25.82	20.32	330		0.50	12.8	0.1
22	698	5.06	27.89	22.04	327		0.60	8.2	0.4

DEPTH	SAMPLE	POC CAST 1	POC CAST 2	PON CAST 1	PON CAST 2	CHLa CAST 1	CHLa CAST 2	PHEO CAST 1	PHEO CAST 2	TSS
m	#	ug/L	ug/L	ug/L	ug/L	mg/m3	mg/m3	mg/m3	mg/m3	mg/L
3	697	167.1		25.1		1.164				4.04
22	698	1002.1		107.0		0.685				57.97

STATION: R4-6 DATE: 06/09/87 TIME: ERR
DEPTH: 0 m
LATITUDE: 69 25.5N LONGITUDE: 133 29.2W

DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	703		3.23				0.01	52.8	2.5

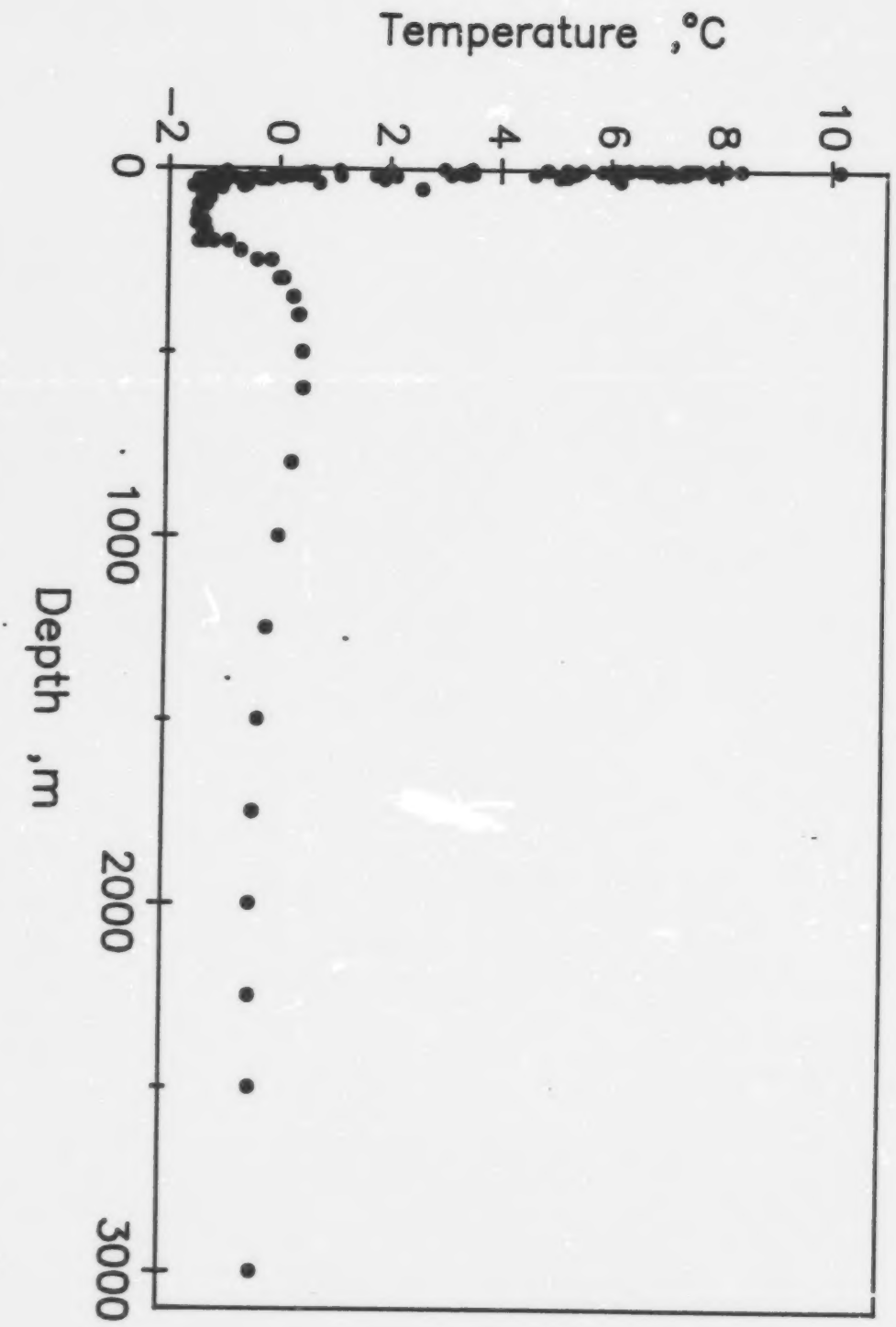
DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	703									

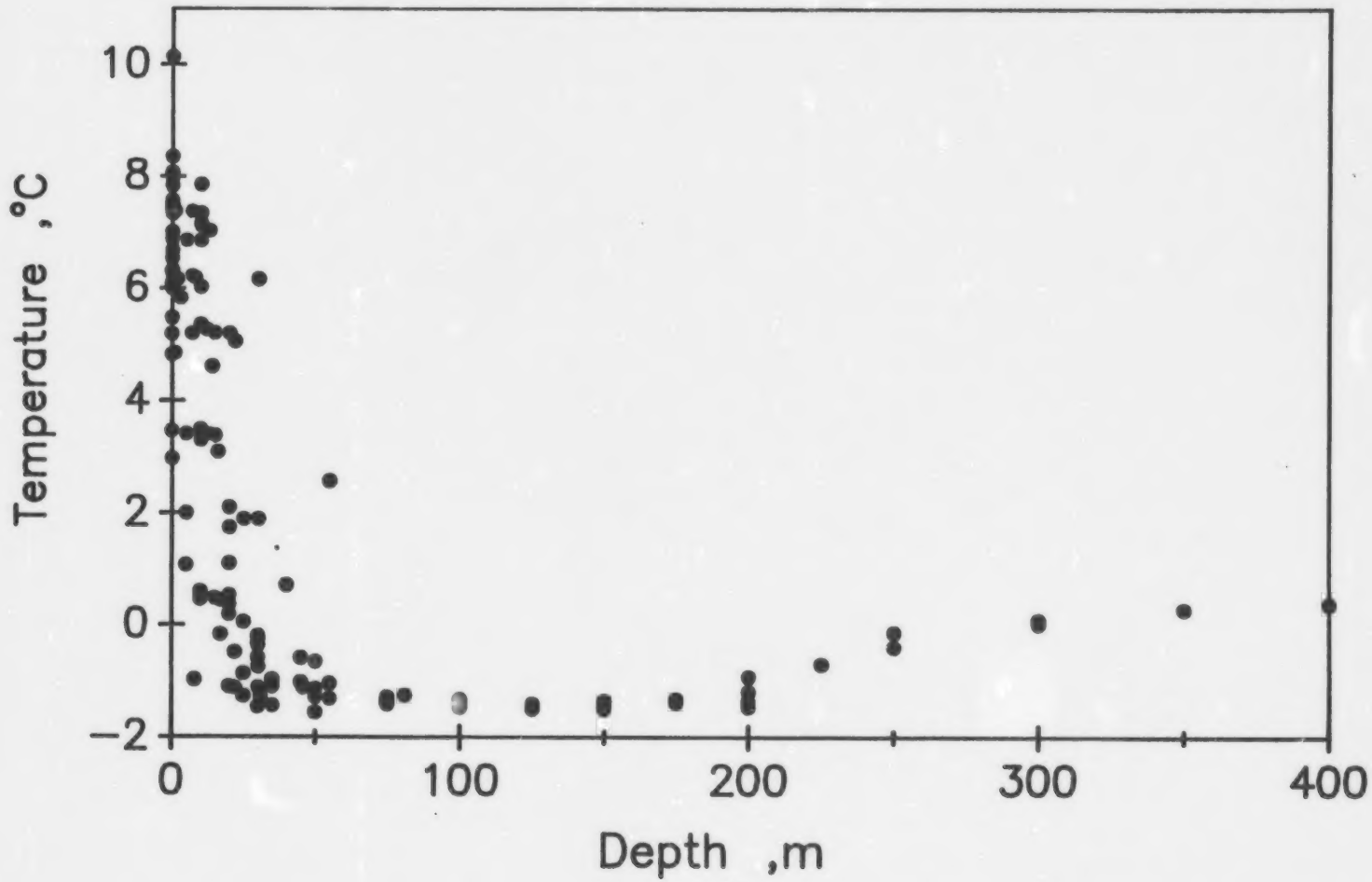
STATION: R5-6 DATE: 06/09/87 TIME: ERR
DEPTH: 0 m
LATITUDE: 69 28.5N LONGITUDE: 133 19 W

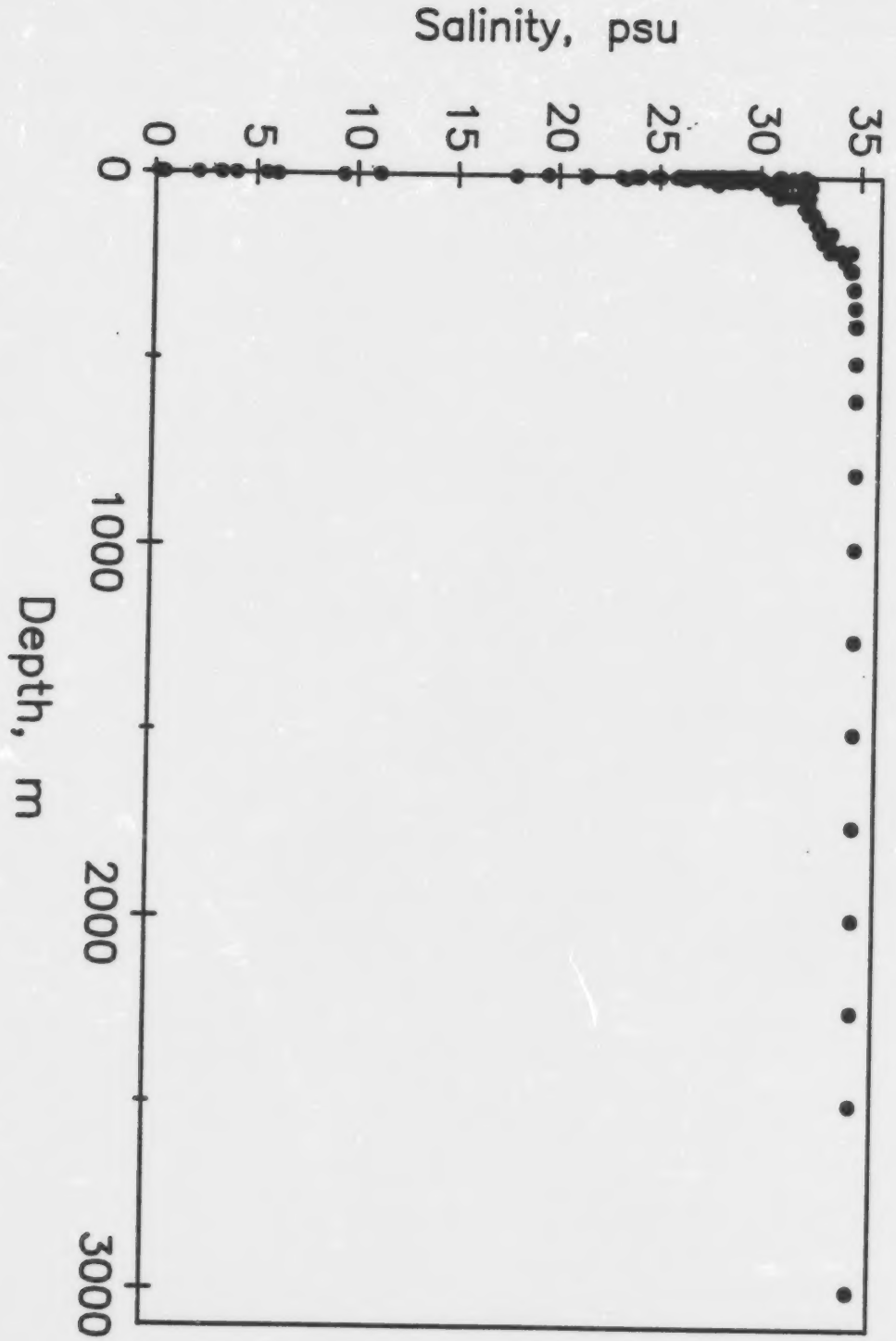
DEPTH m	SAMPLE #	TEMP. deg C	SALINITY X10^3	GAMMA kg/m3	OXYGEN mmol/m3	O16/O18	PHOSPHATE mmol/m3	SILICATE mmol/m3	NITRATE mmol/m3
0	702		11.10				0.08	39.0	1.7

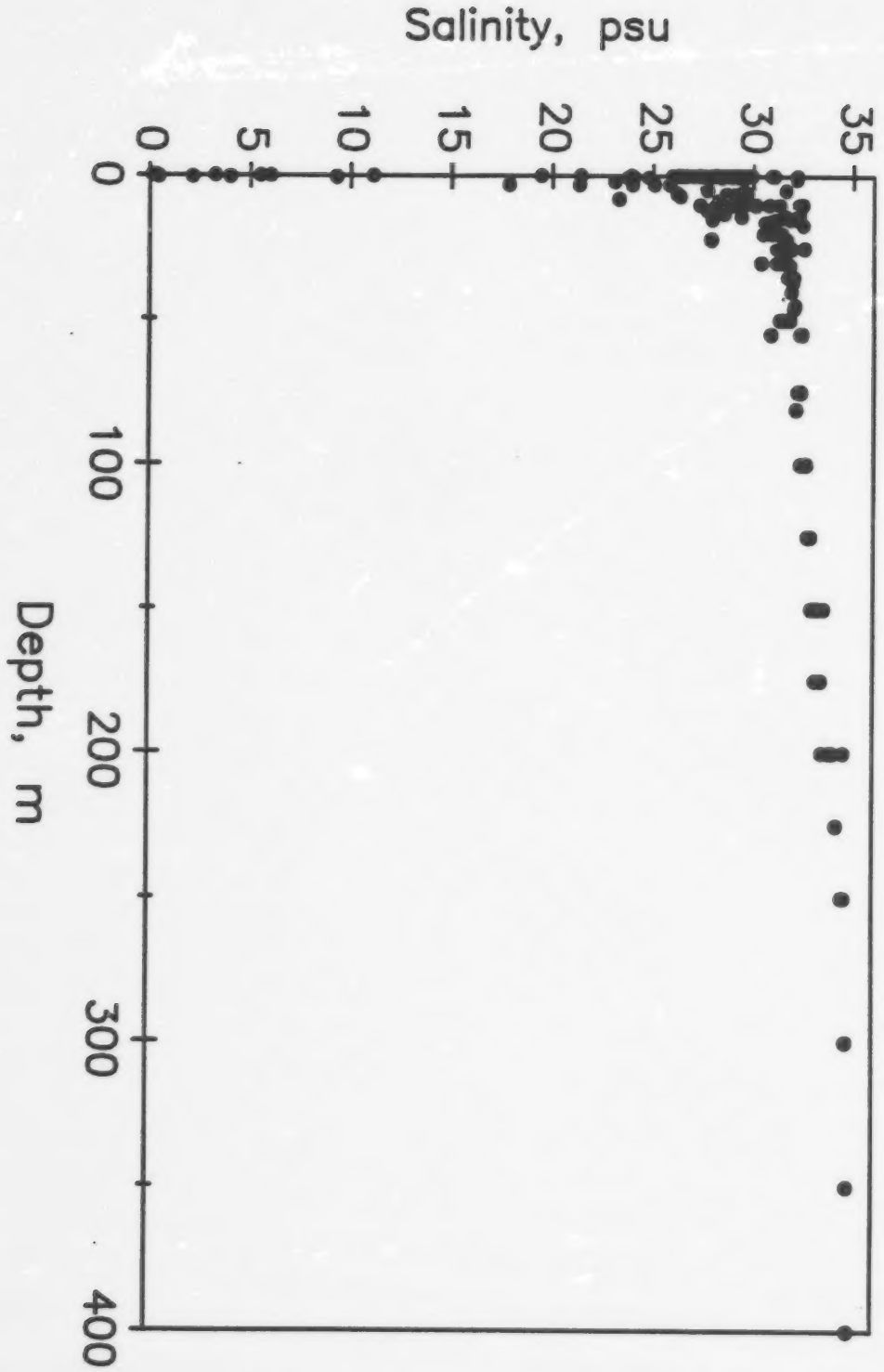
DEPTH m	SAMPLE #	POC CAST 1 ug/L	POC CAST 2 ug/L	PON CAST 1 ug/L	PON CAST 2 ug/L	CHLa CAST 1 mg/m3	CHLa CAST 2 mg/m3	PHEO CAST 1 mg/m3	PHEO CAST 2 mg/m3	TSS mg/L
0	702									

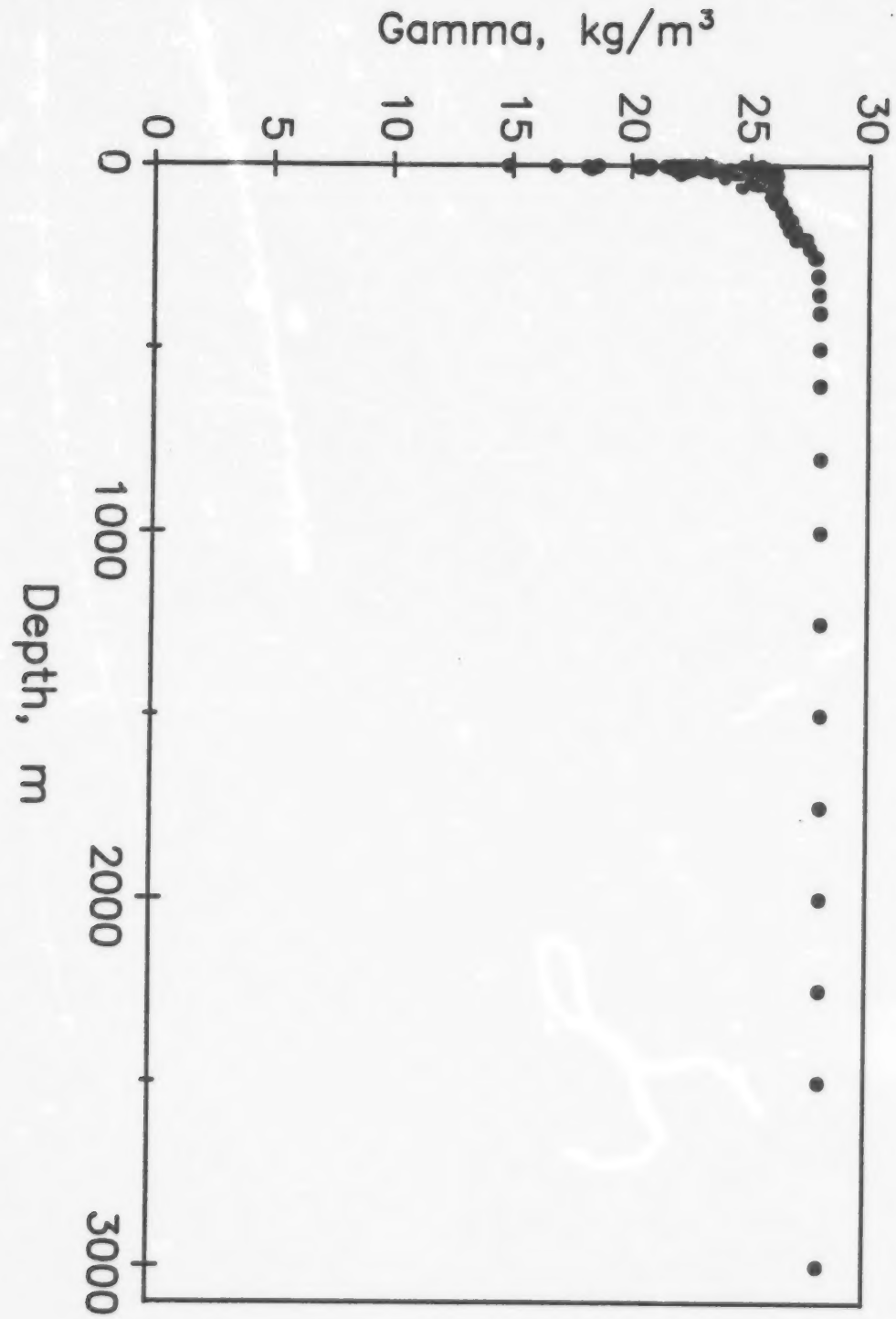
5 APPENDIX 2; SCATTER PLOTS

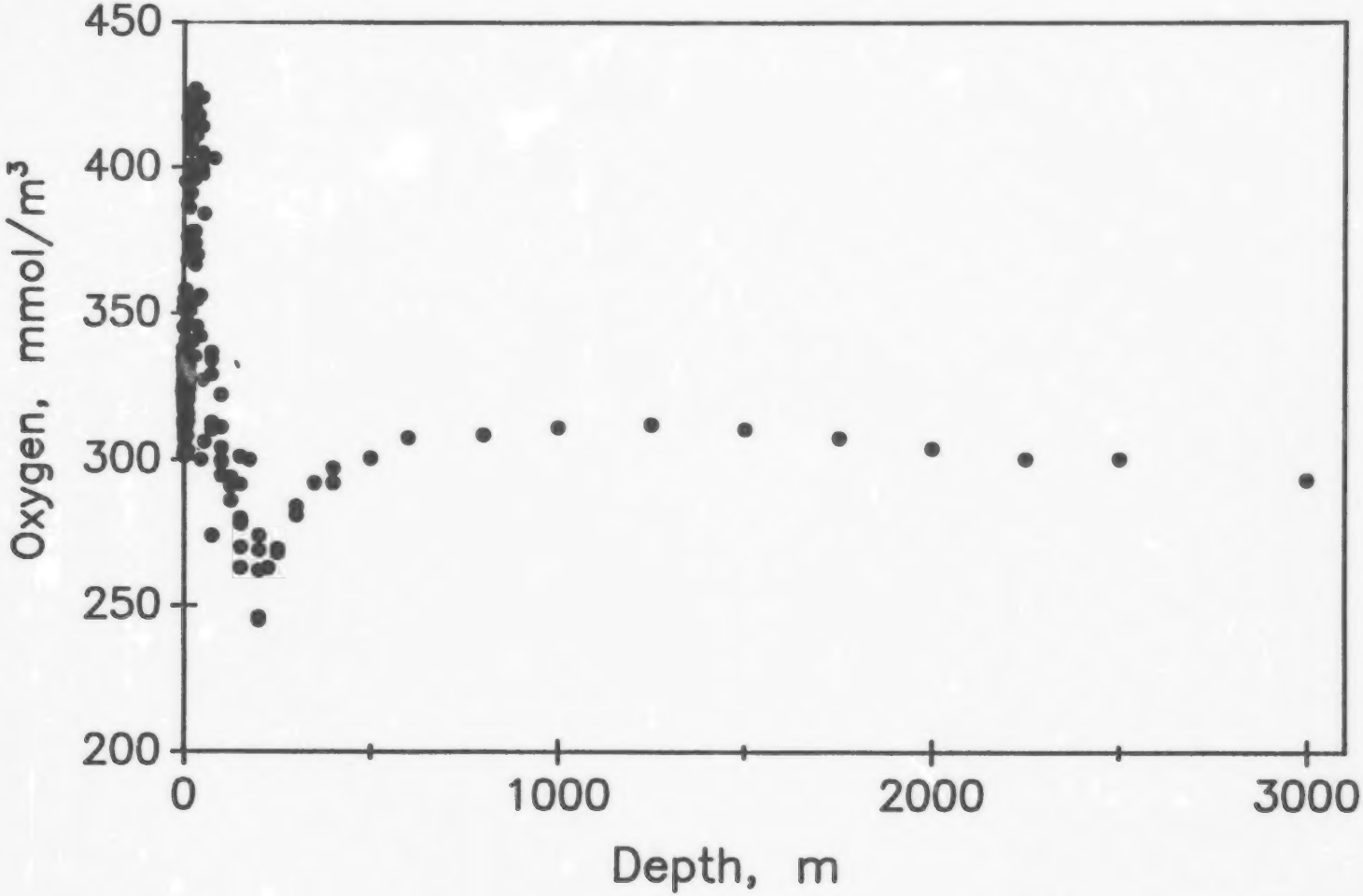

Temperature ,°C
−2
0
2
4
6
8
10
0
1000
2000
3000
Depth ,m

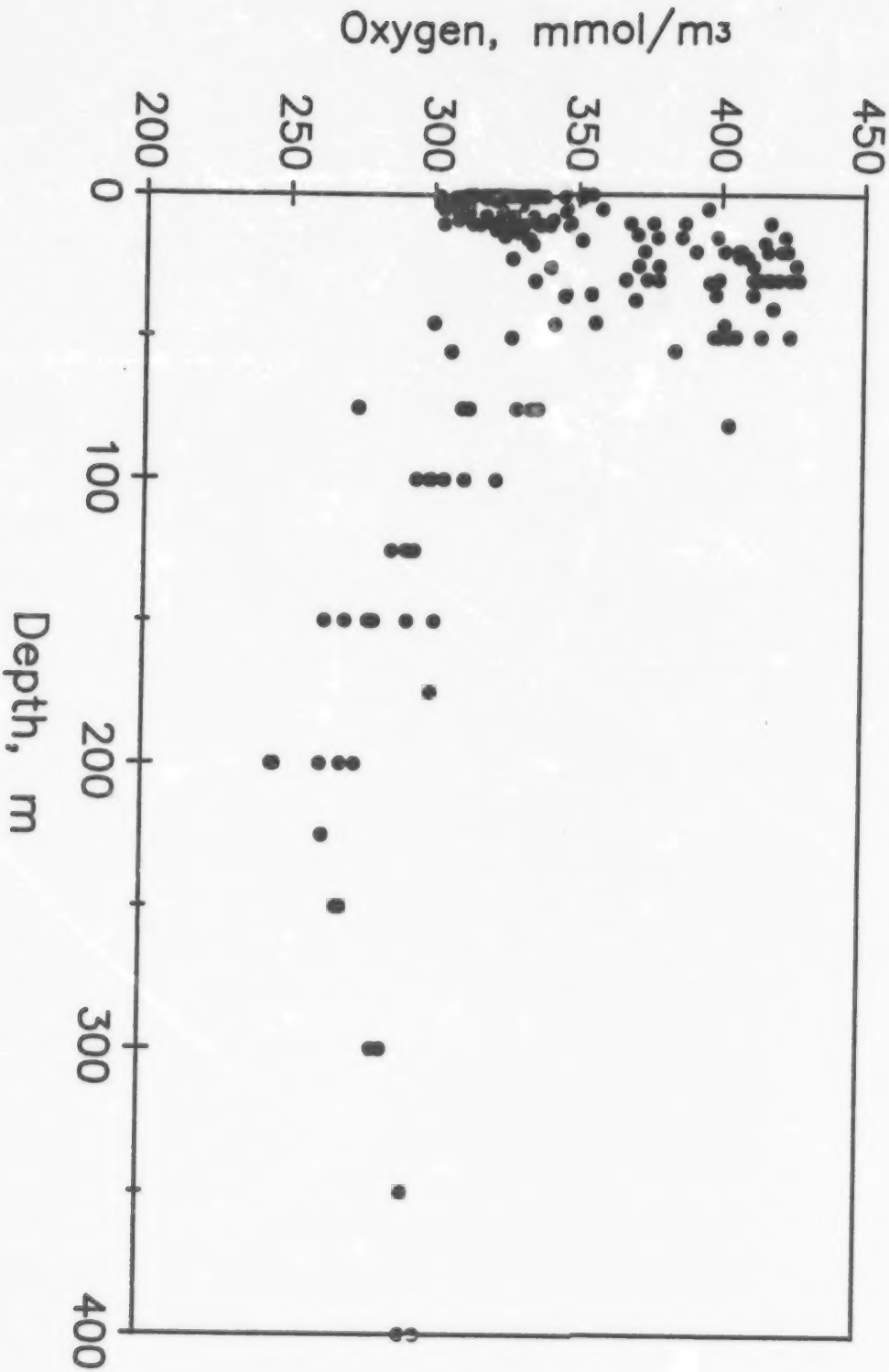

Temperature ,°C
10
8
6
4
2
0
−2
0
100
200
300
400
Depth ,m

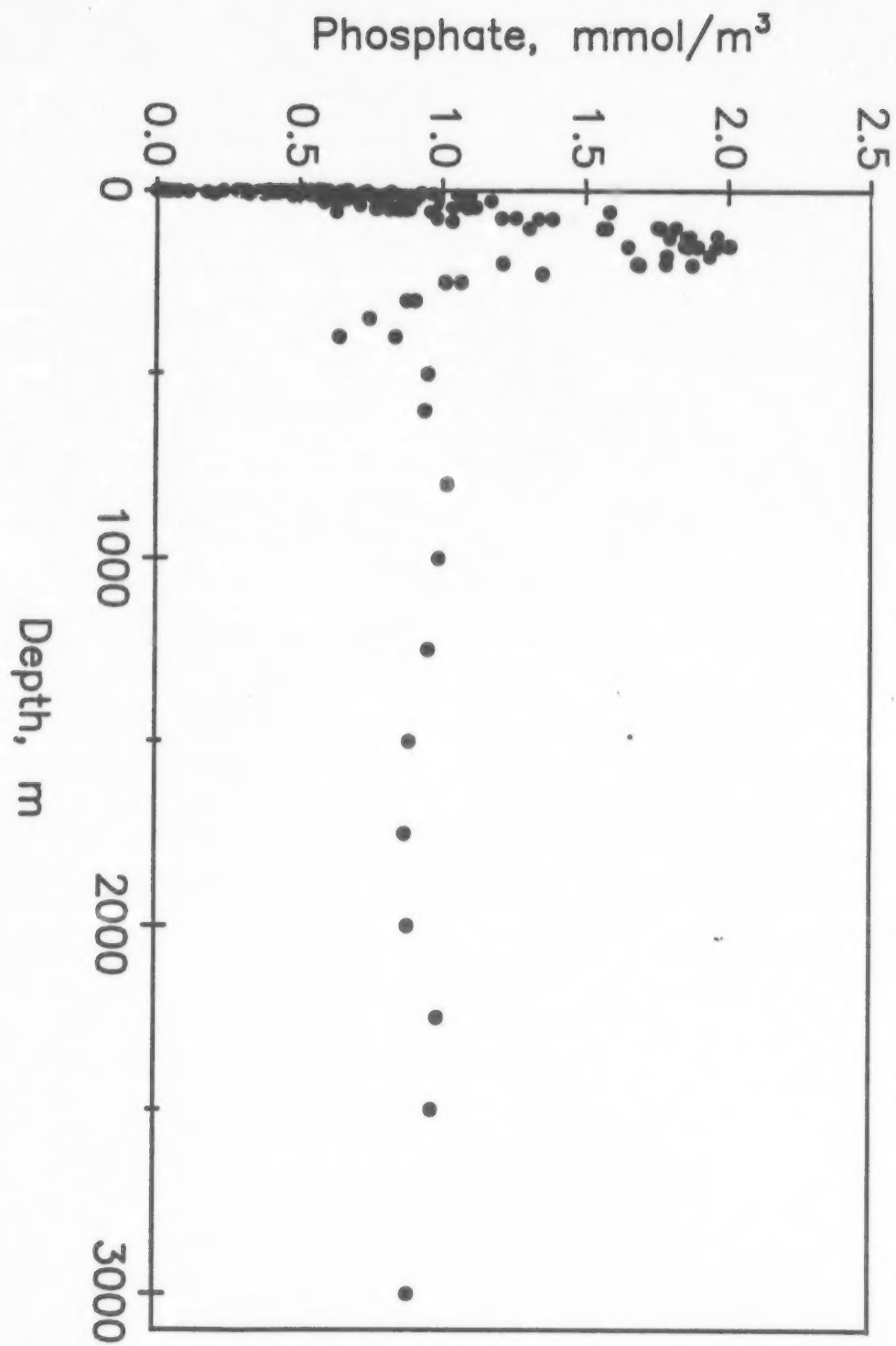

Salinity, psu
0
5
10
15
20
25
30
35
Depth, m
0
1000
2000
3000

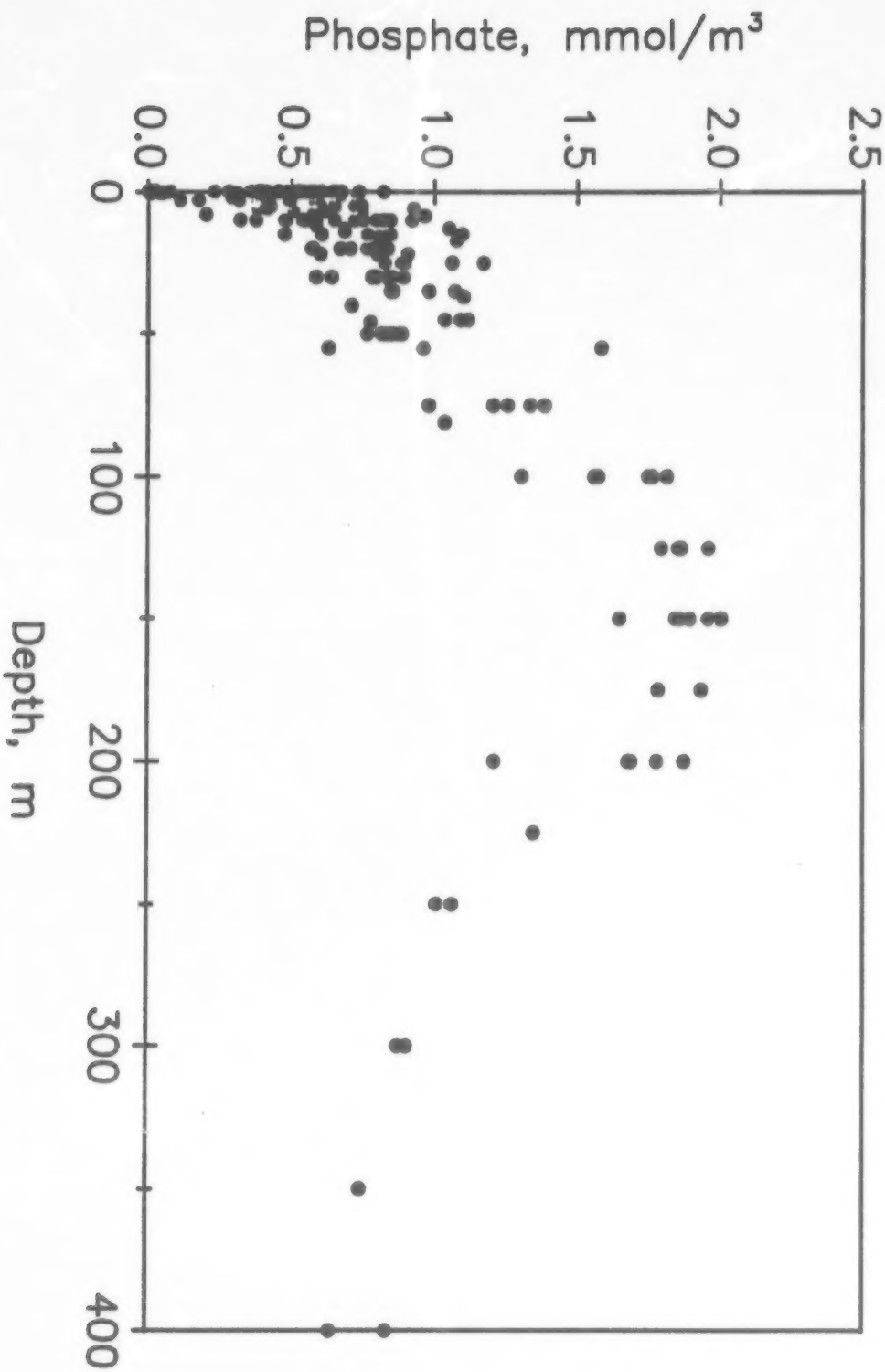

Salinity, psu
0
5
10
15
20
25
30
35
Depth, m
0
100
200
300
400

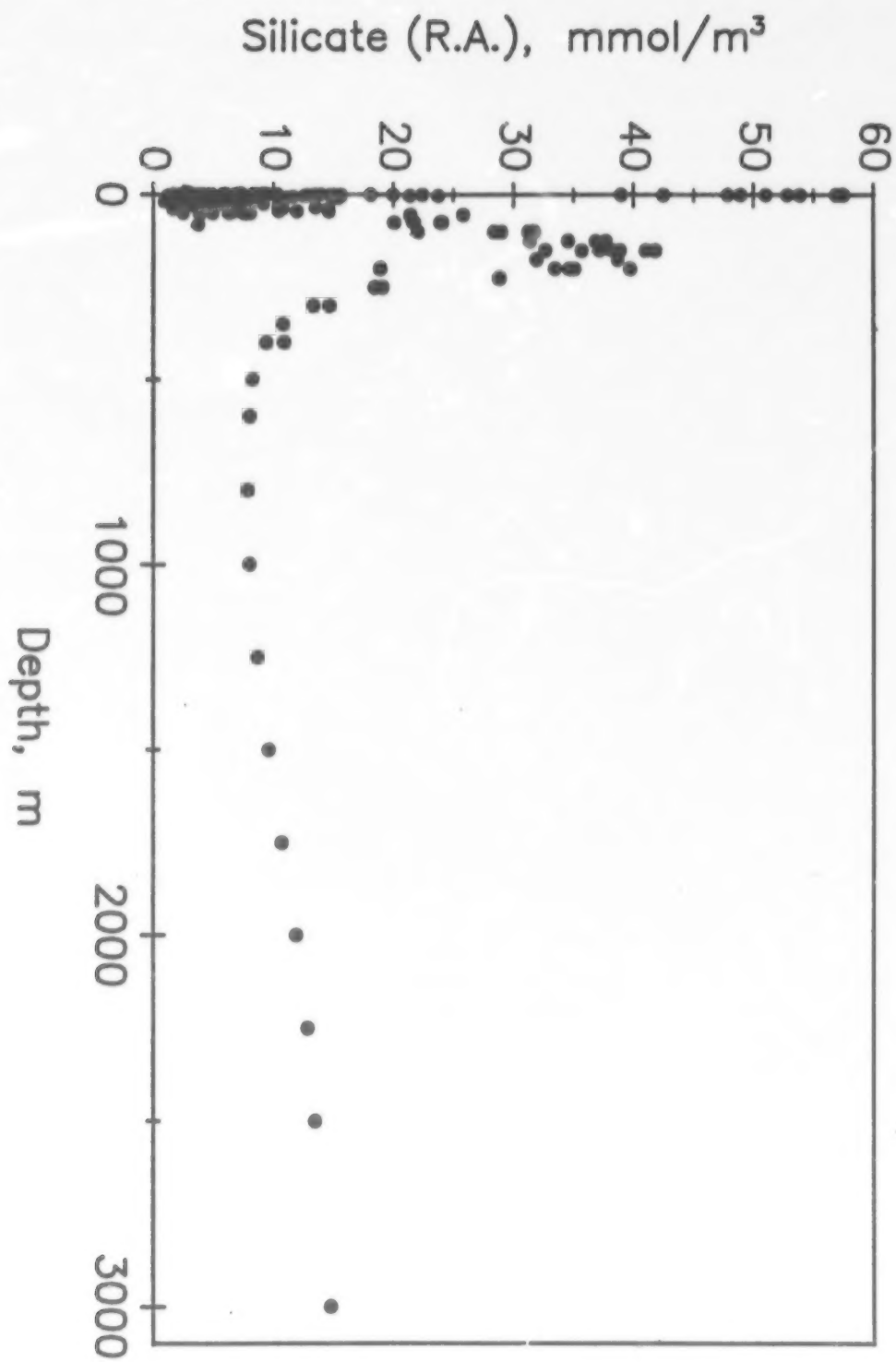

Gamma, kg/m³
0
5
10
15
20
25
30
0
1000
2000
3000
Depth, m

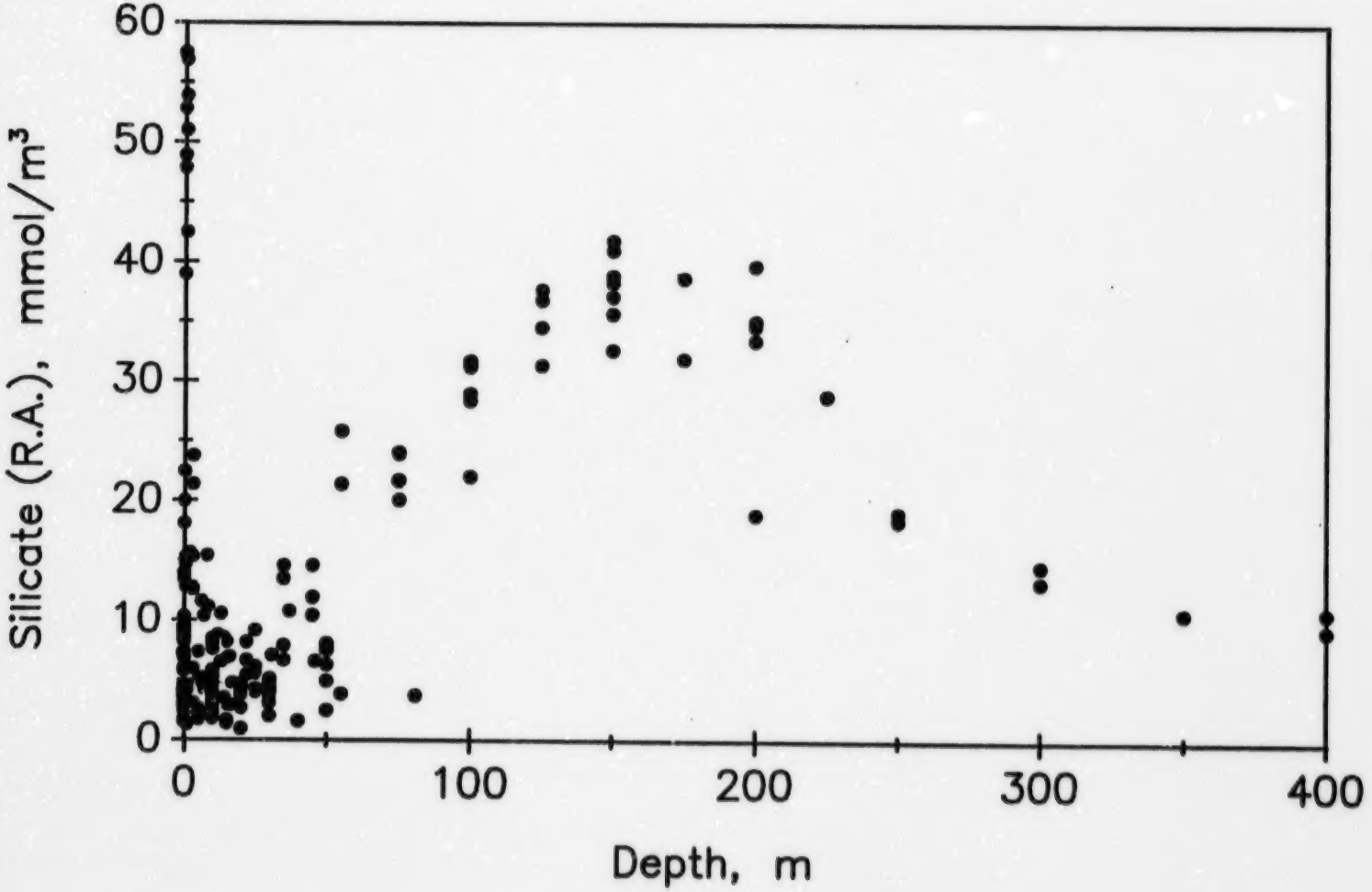

450
400
350
300
250
200
Oxygen, mmol/m³
0
1000
2000
3000
Depth, m

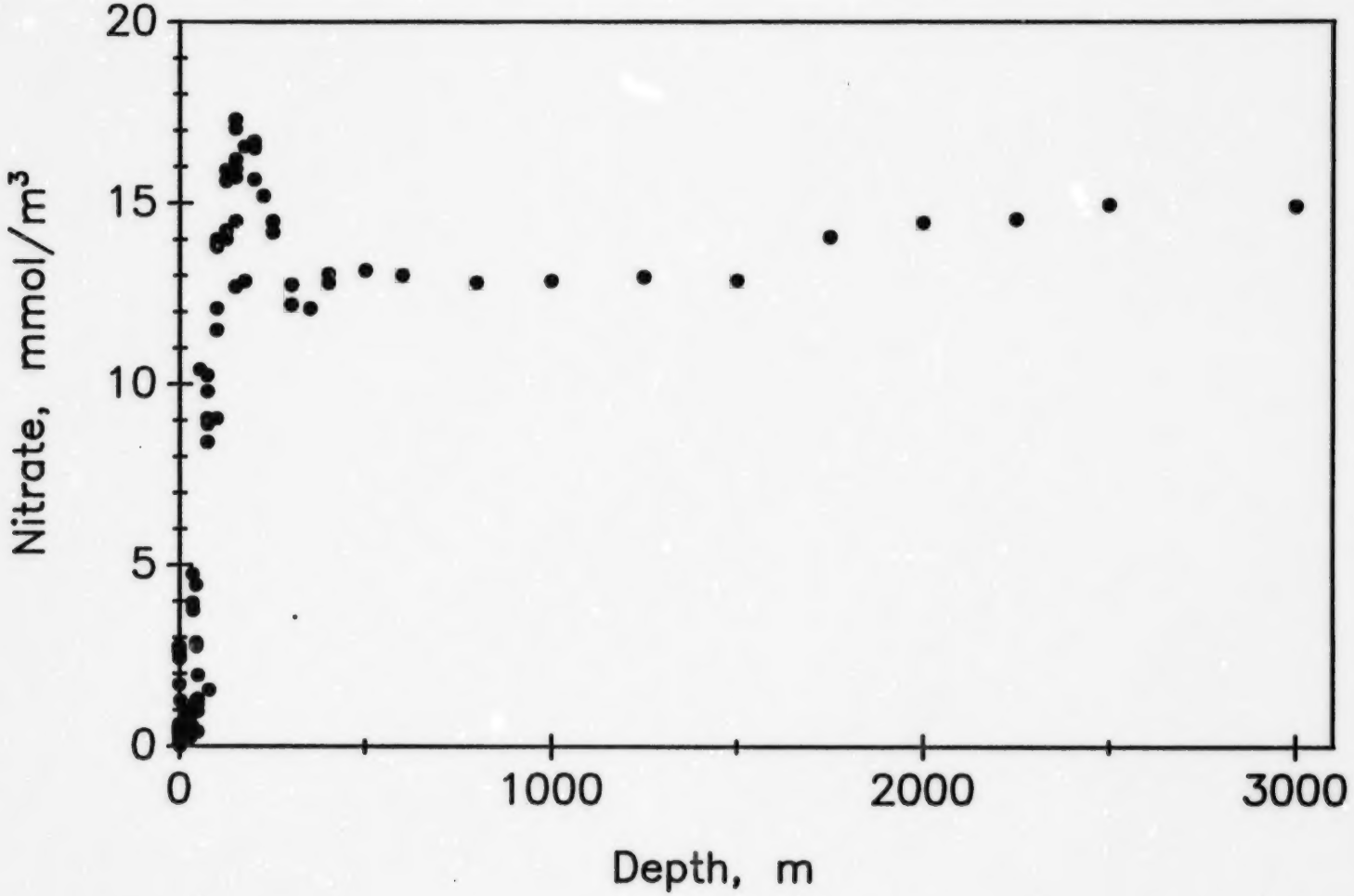

Oxygen, mmol/m3
200
250
300
350
400
450
0
100
200
300
400
Depth, m

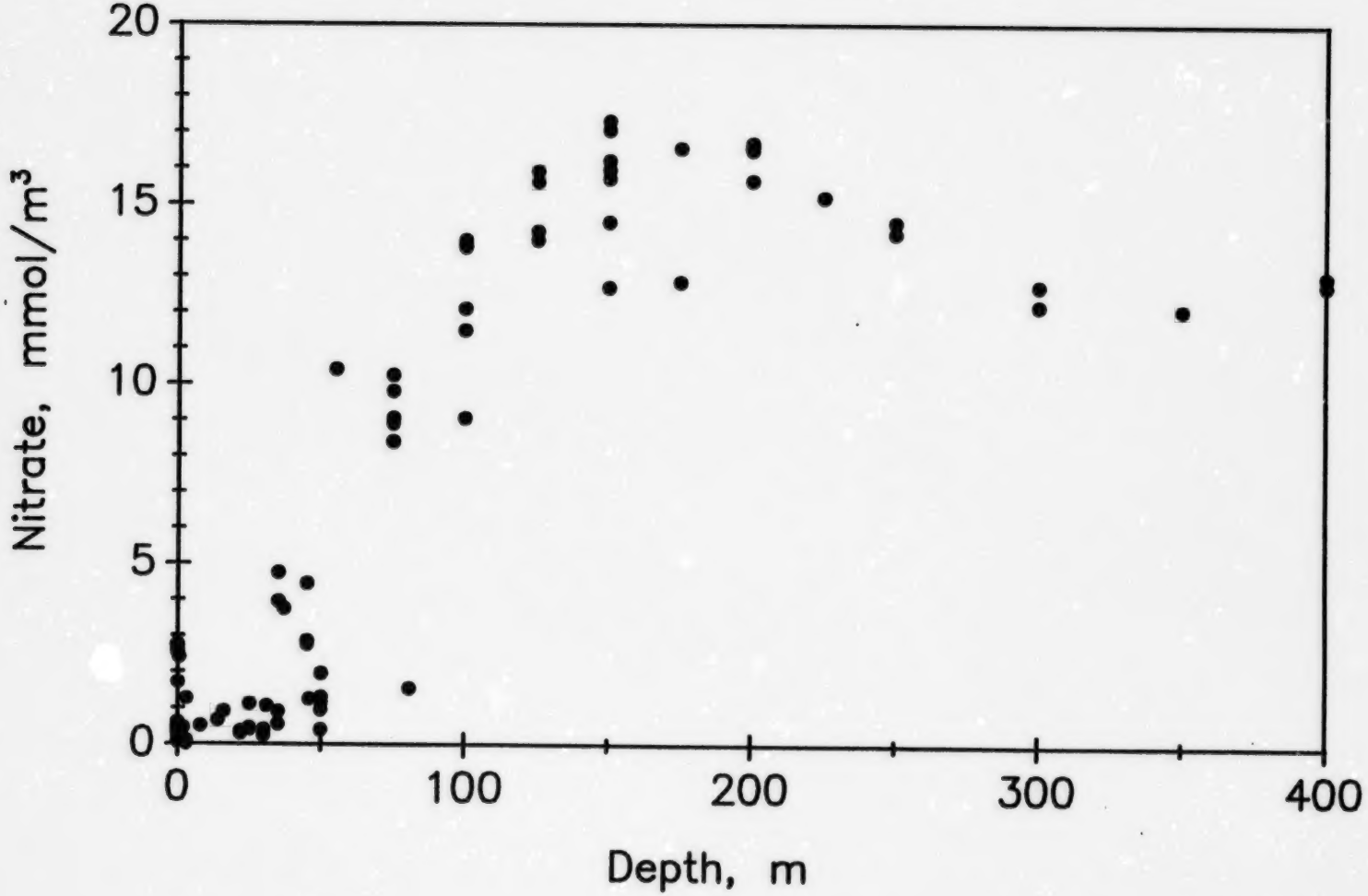

Phosphate, mmol/m³
0.0
0.5
1.0
1.5
2.0
2.5
0
1000
2000
3000
Depth, m

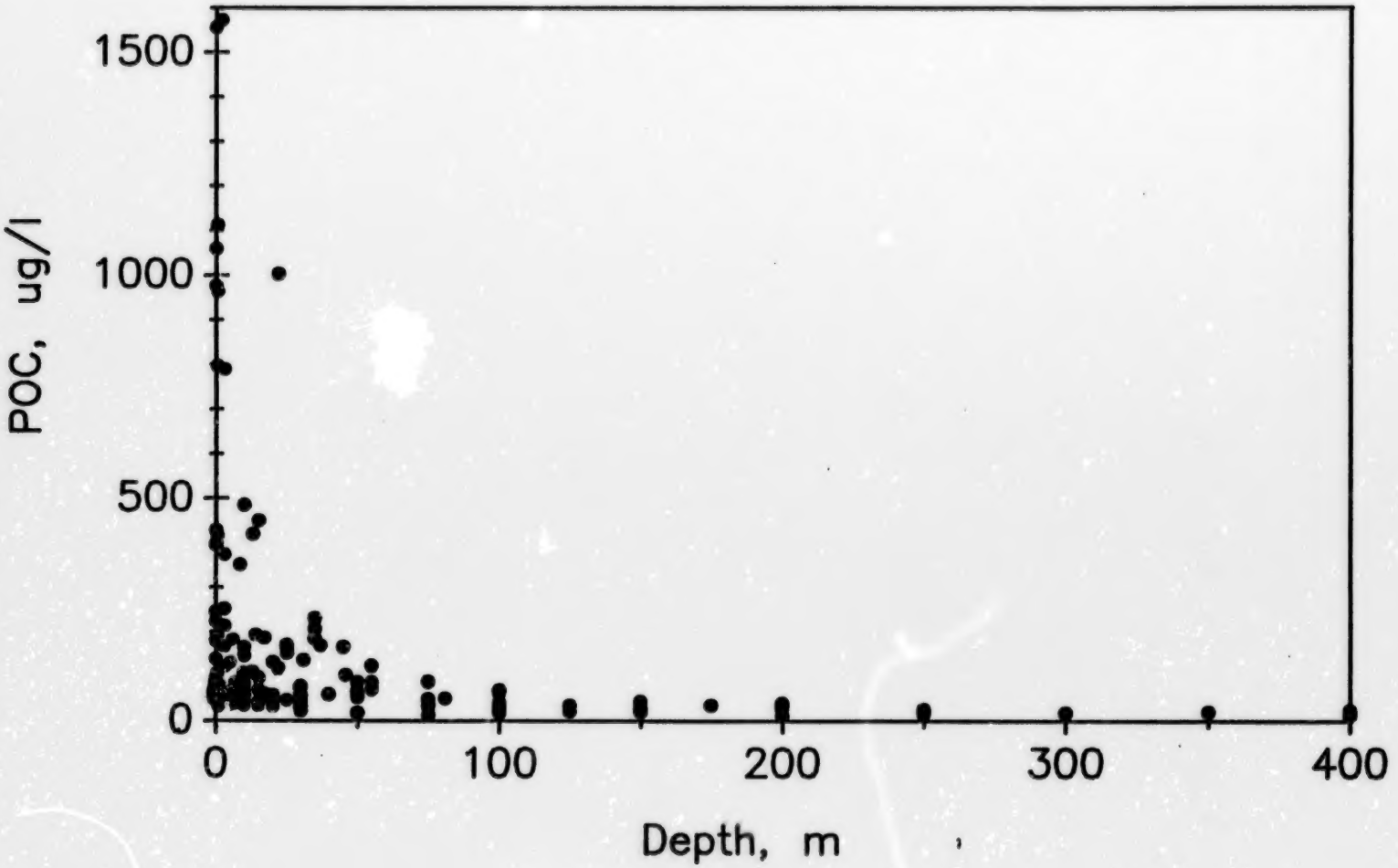

Phosphate, mmol/m³
0.0
0.5
1.0
1.5
2.0
2.5
0
100
200
300
400
Depth, m

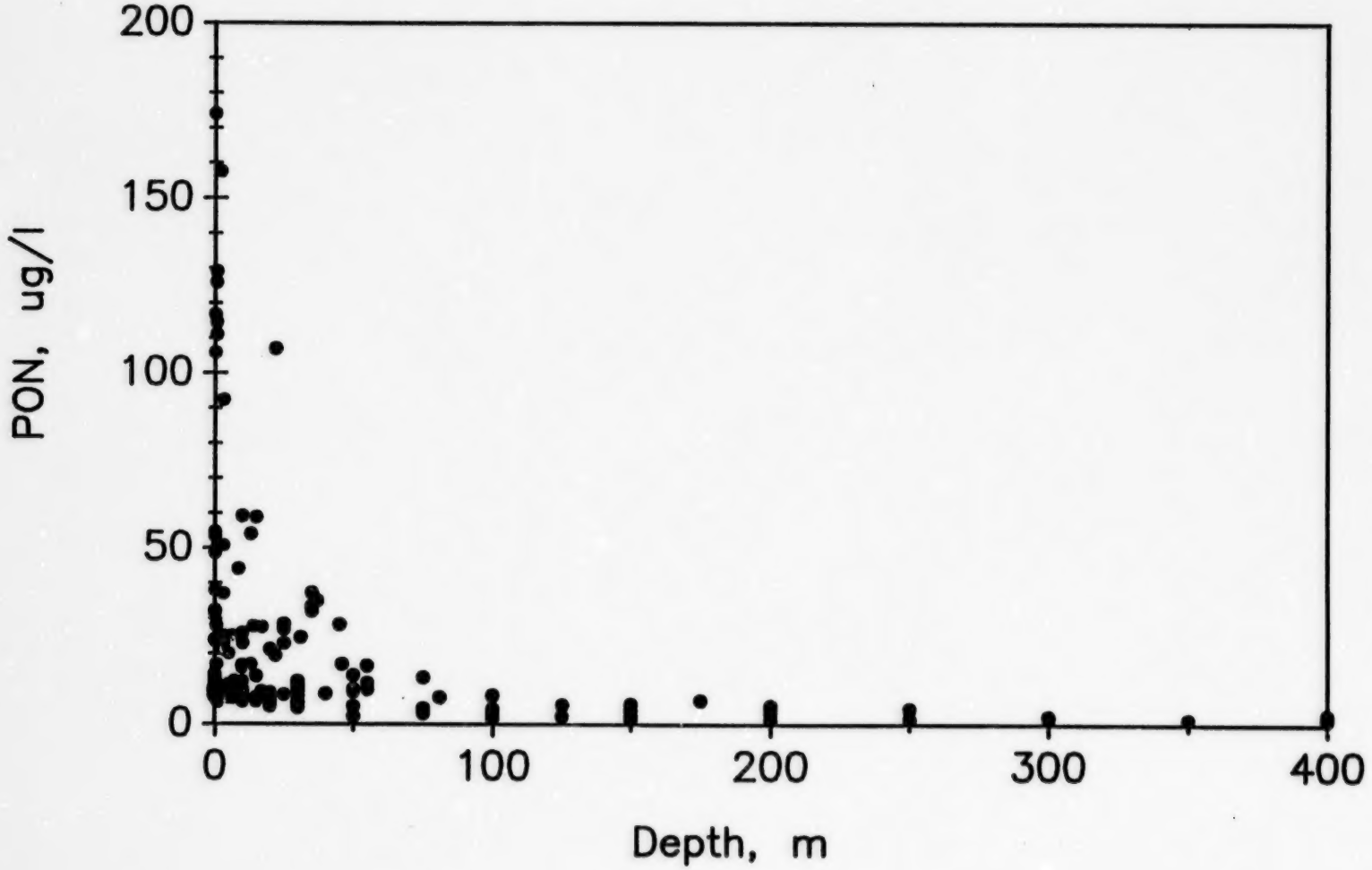

Silicate (R.A.), mmol/m³
0
10
20
30
40
50
60
0
1000
2000
3000
Depth, m

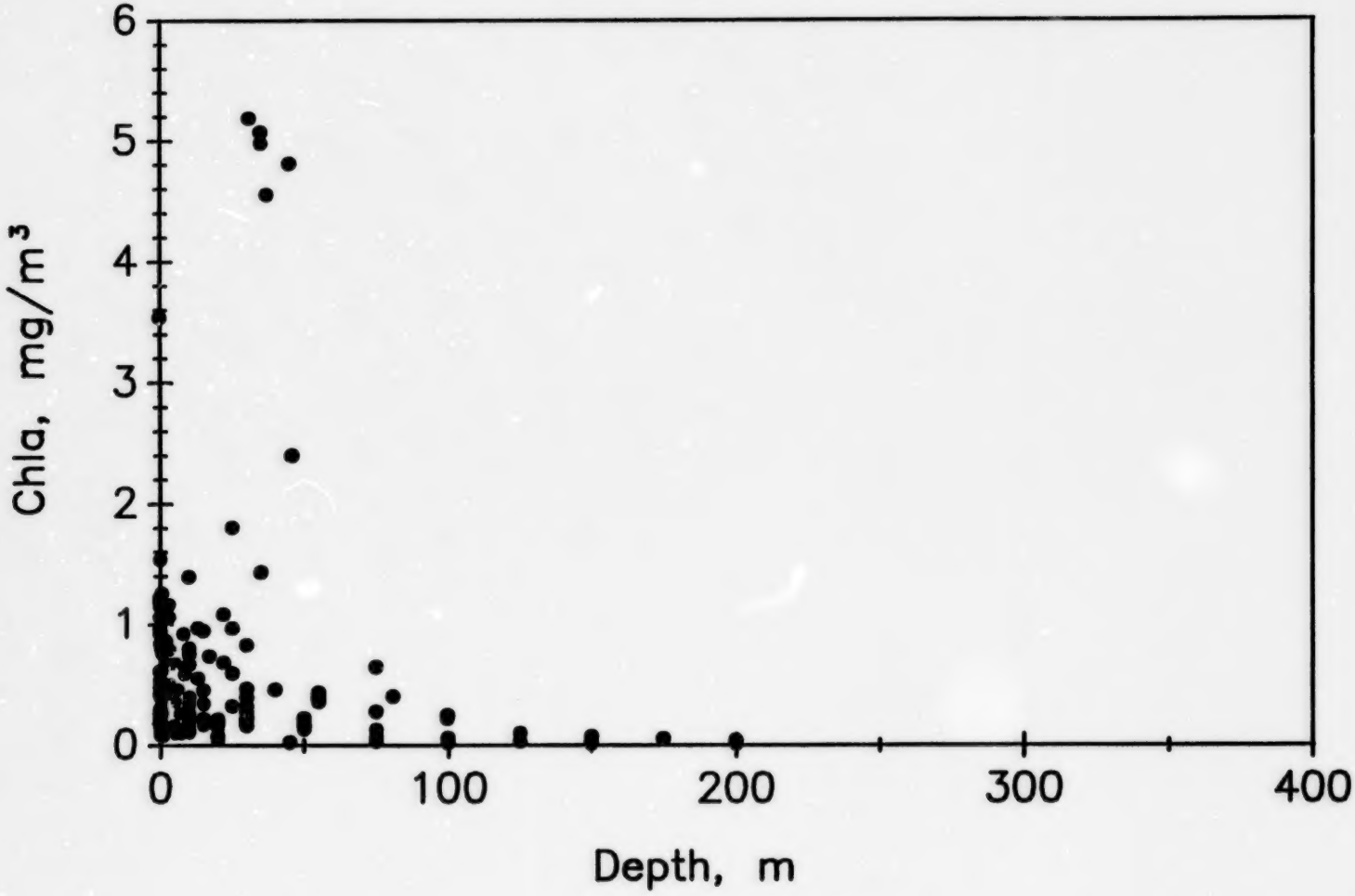

Silicate (R.A.), mmol/m³
60
50
40
30
20
10
0
0
100
200
300
400
Depth, m

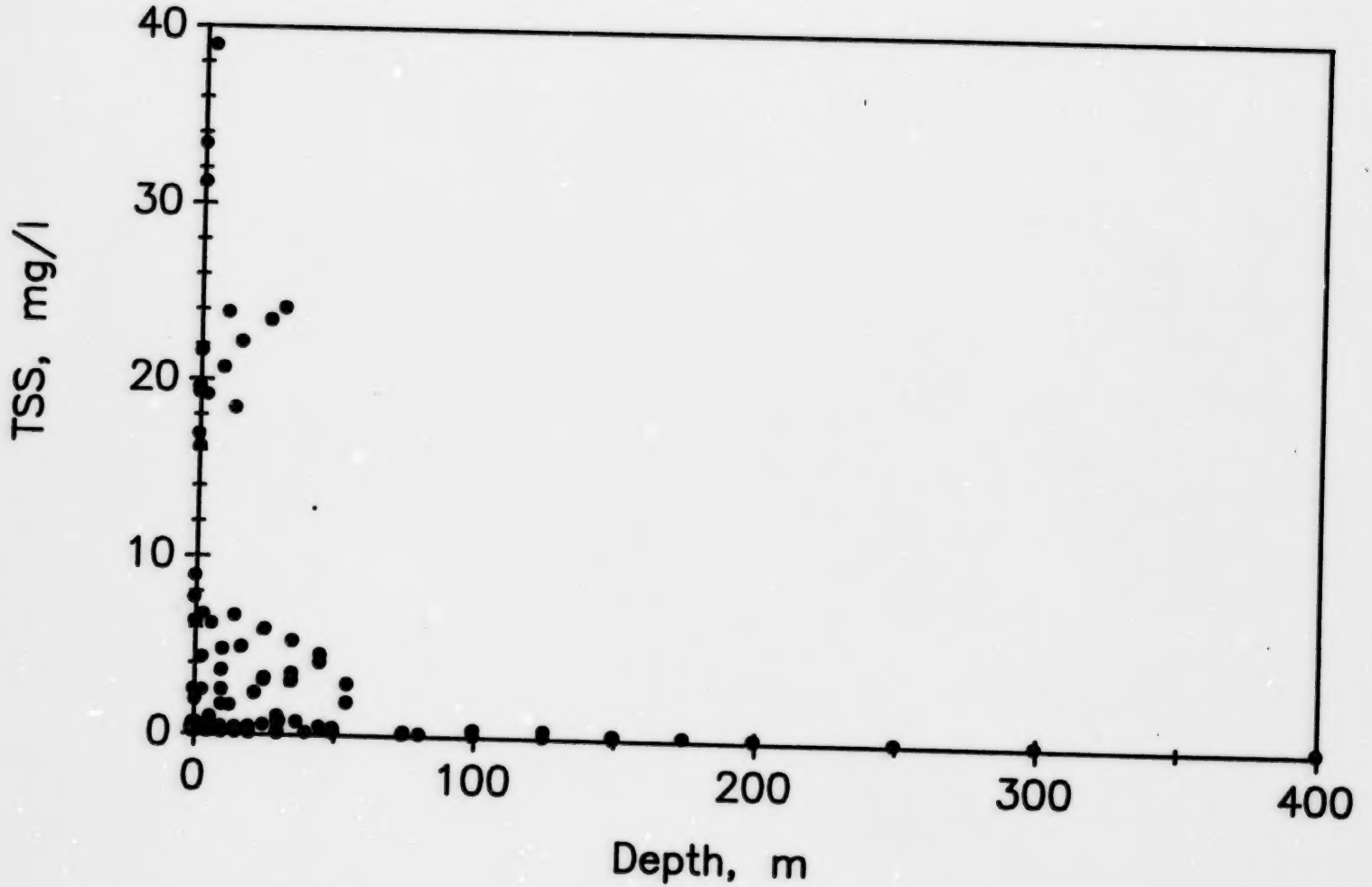

20
15
10
5
0
Nitrate, mmol/m³
0
1000
2000
3000
Depth, m

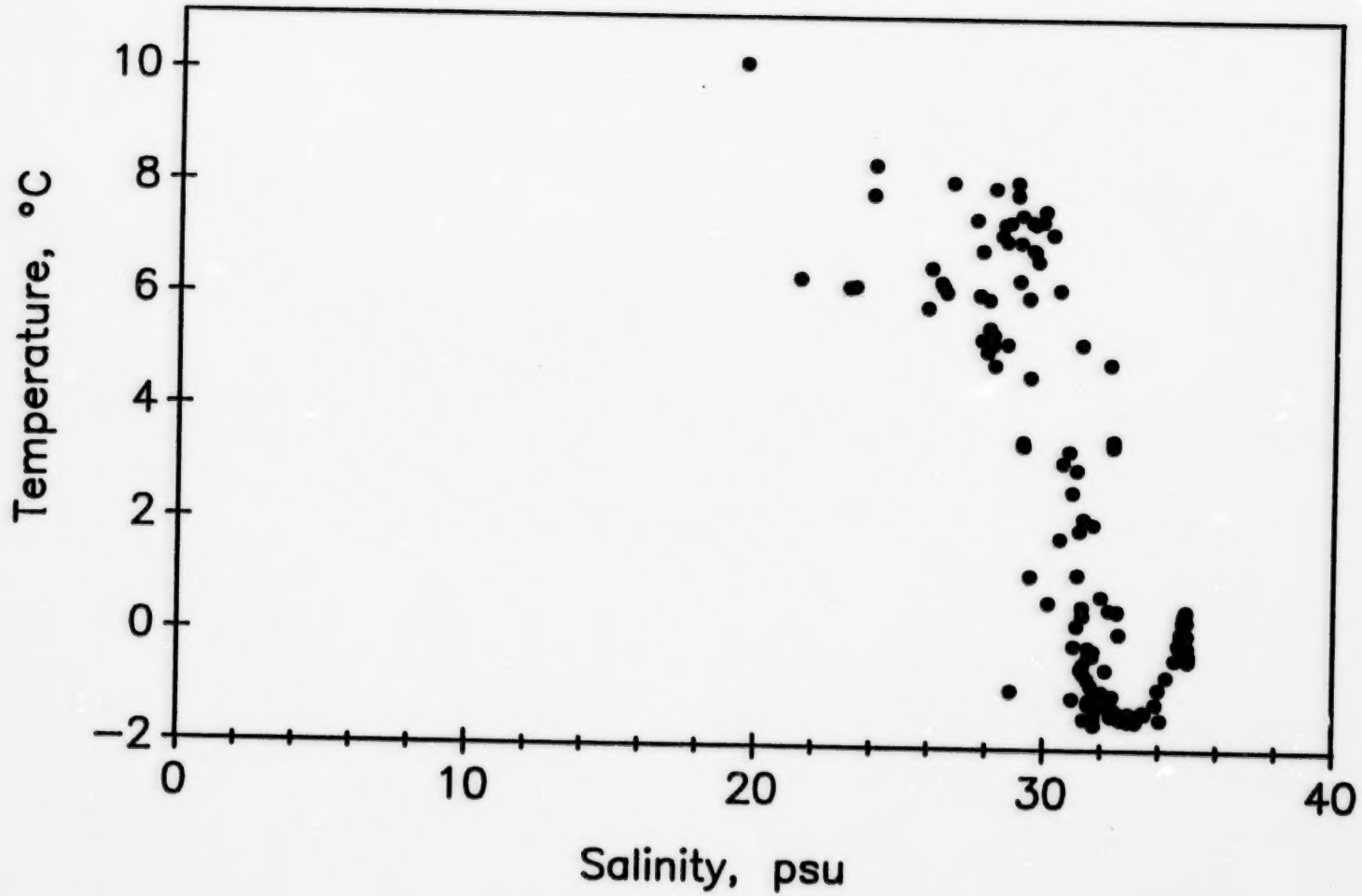

20
15
10
5
0
Nitrate, mmol/m³
0
100
200
300
400
Depth, m

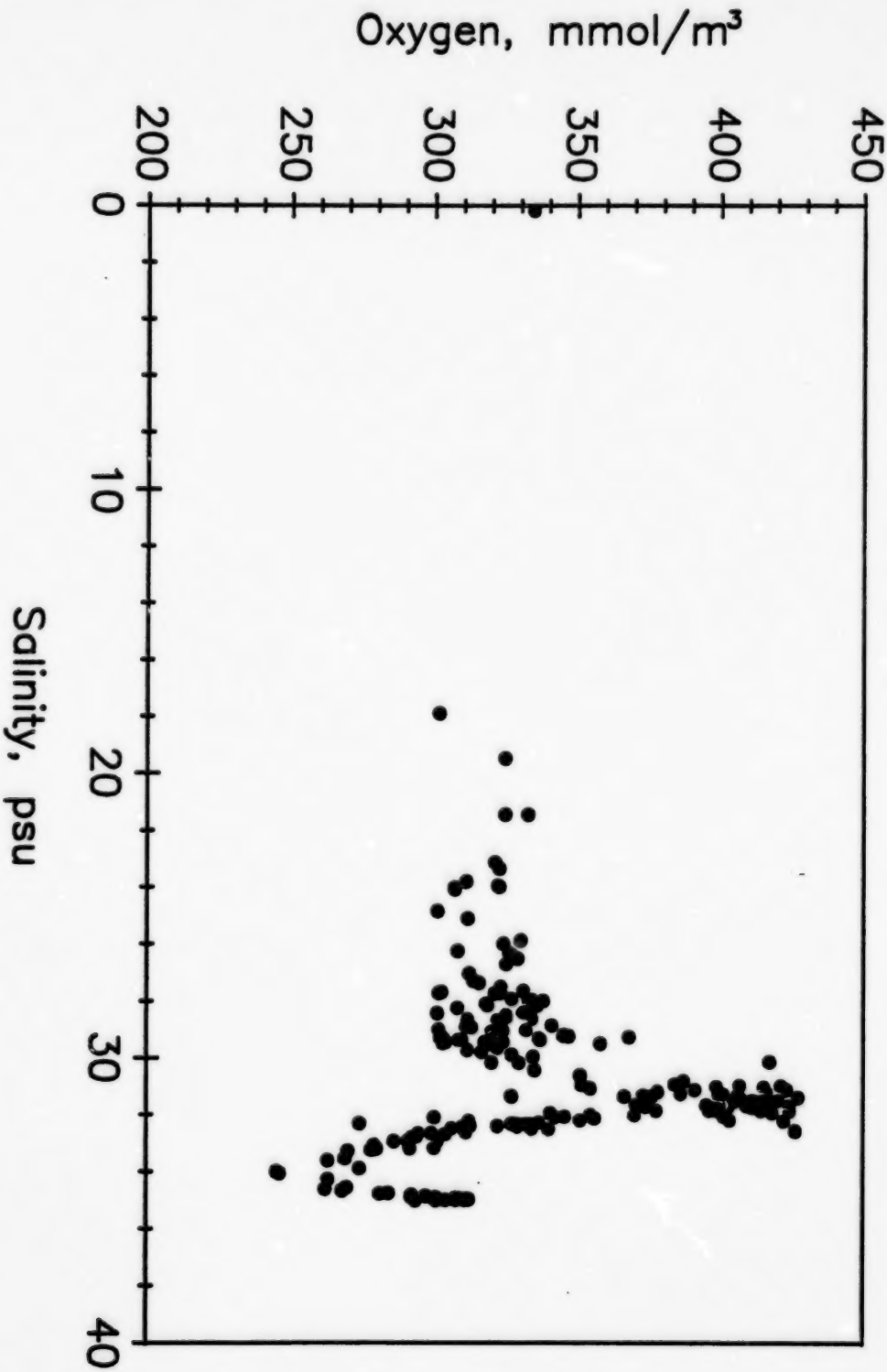

1500
1000
500
0
POC, ug/l
0
100
200
300
400
Depth, m

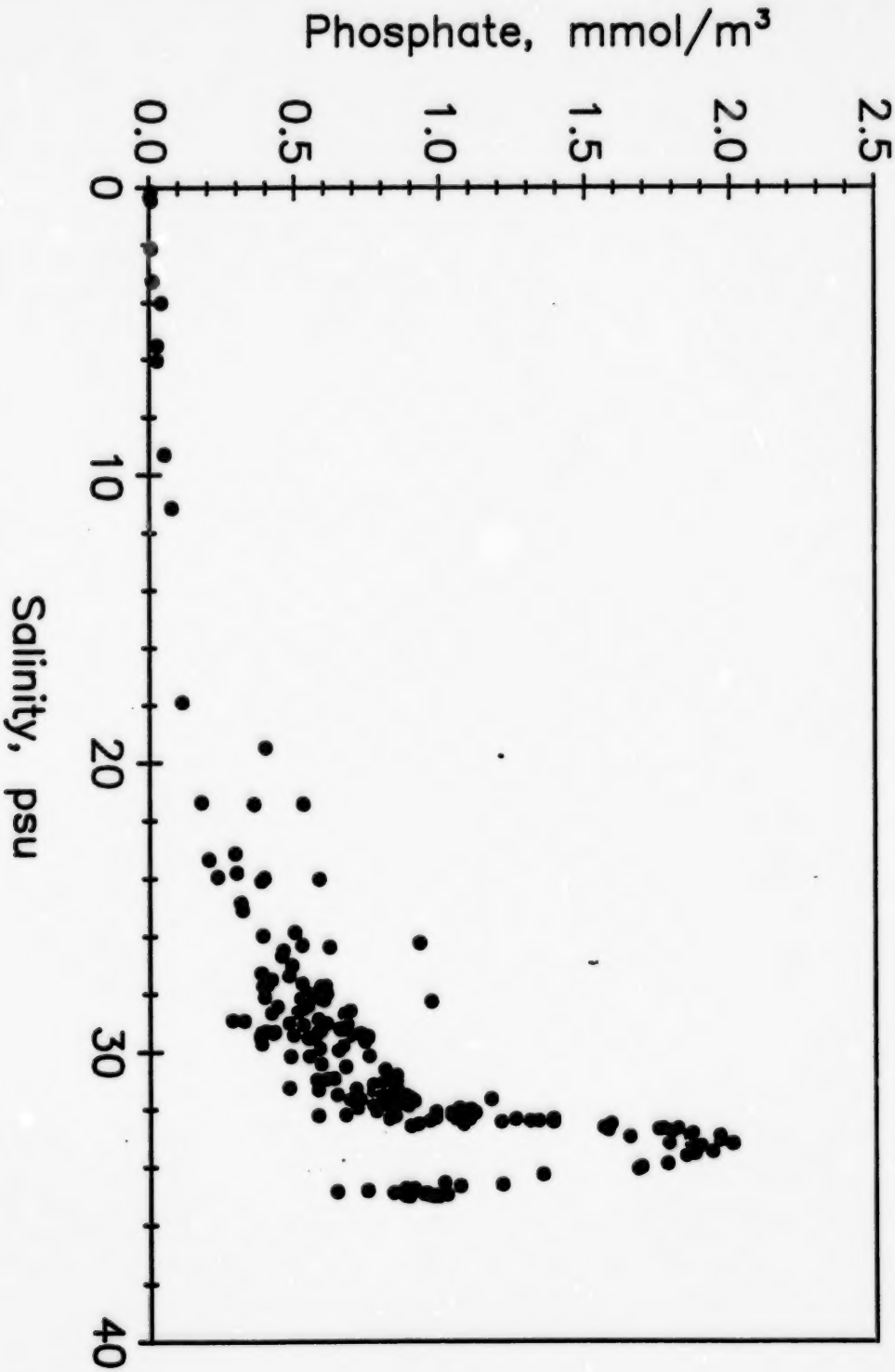

200
150
100
50
0
PON, ug/l
0
100
200
300
400
Depth, m

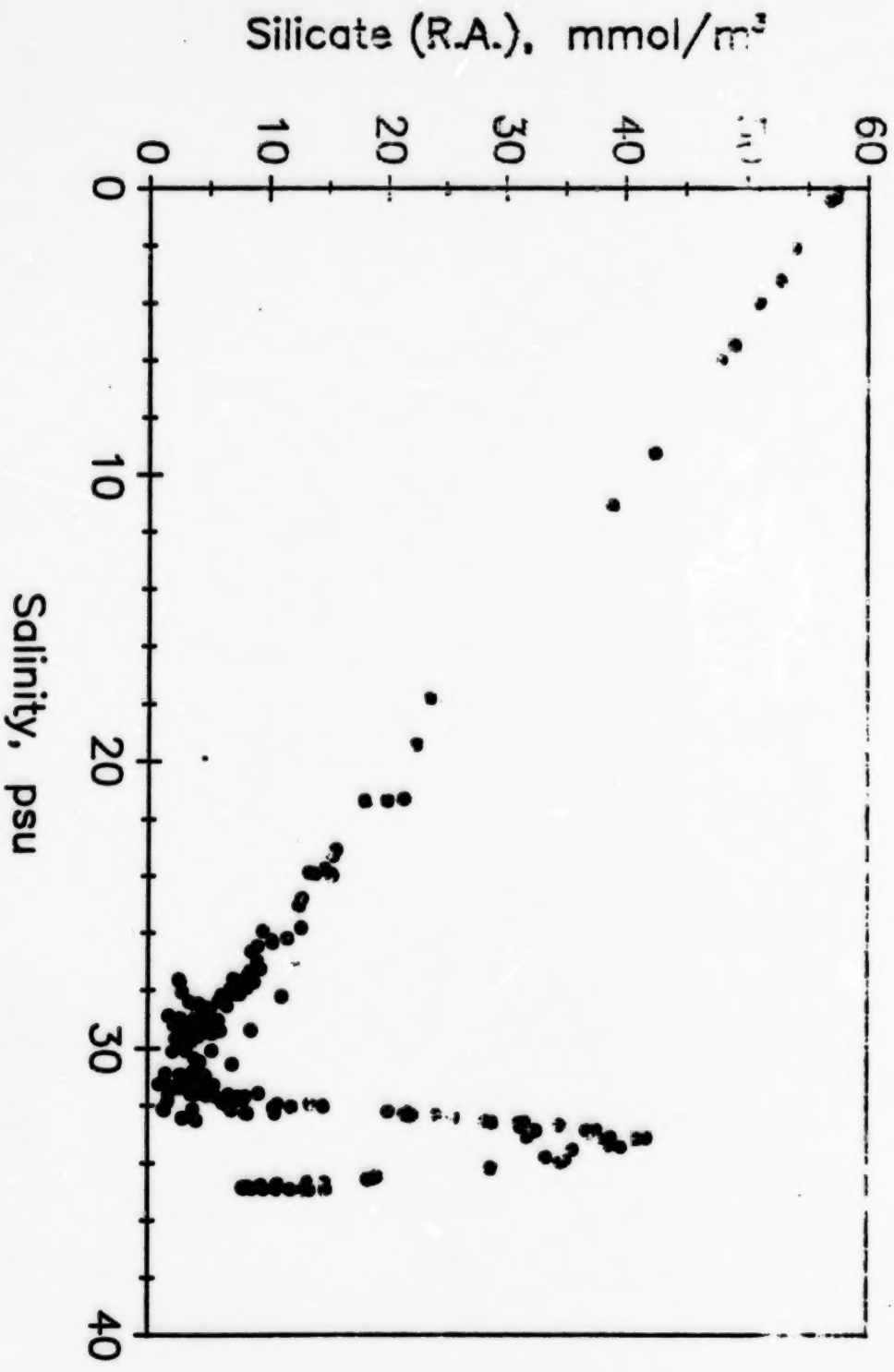

Chla, mg/m³
6
5
4
3
2
1
0
0
100
200
300
400
Depth, m

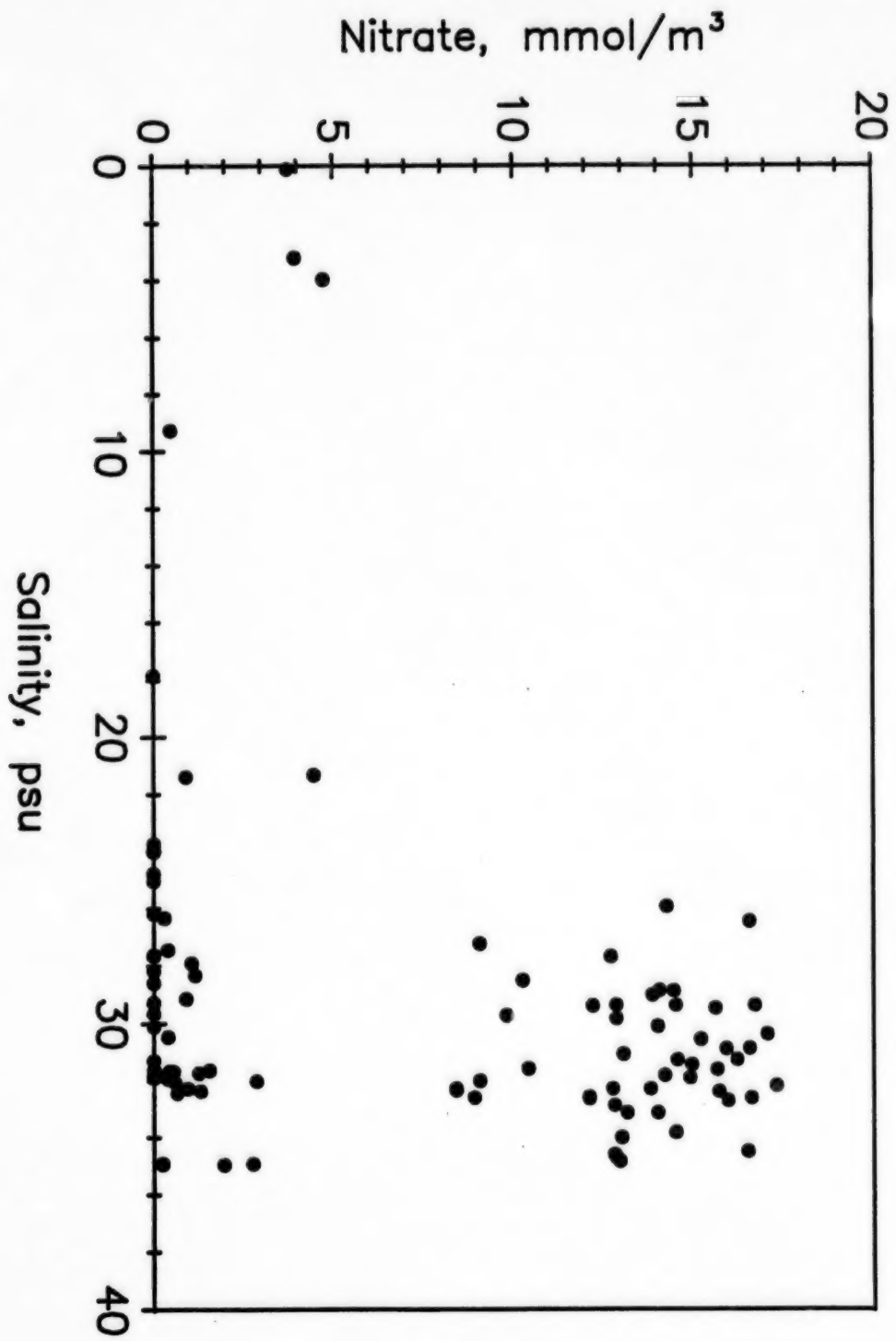

40
30
20
10
0
TSS, mg/l
0
100
200
300
400
Depth, m

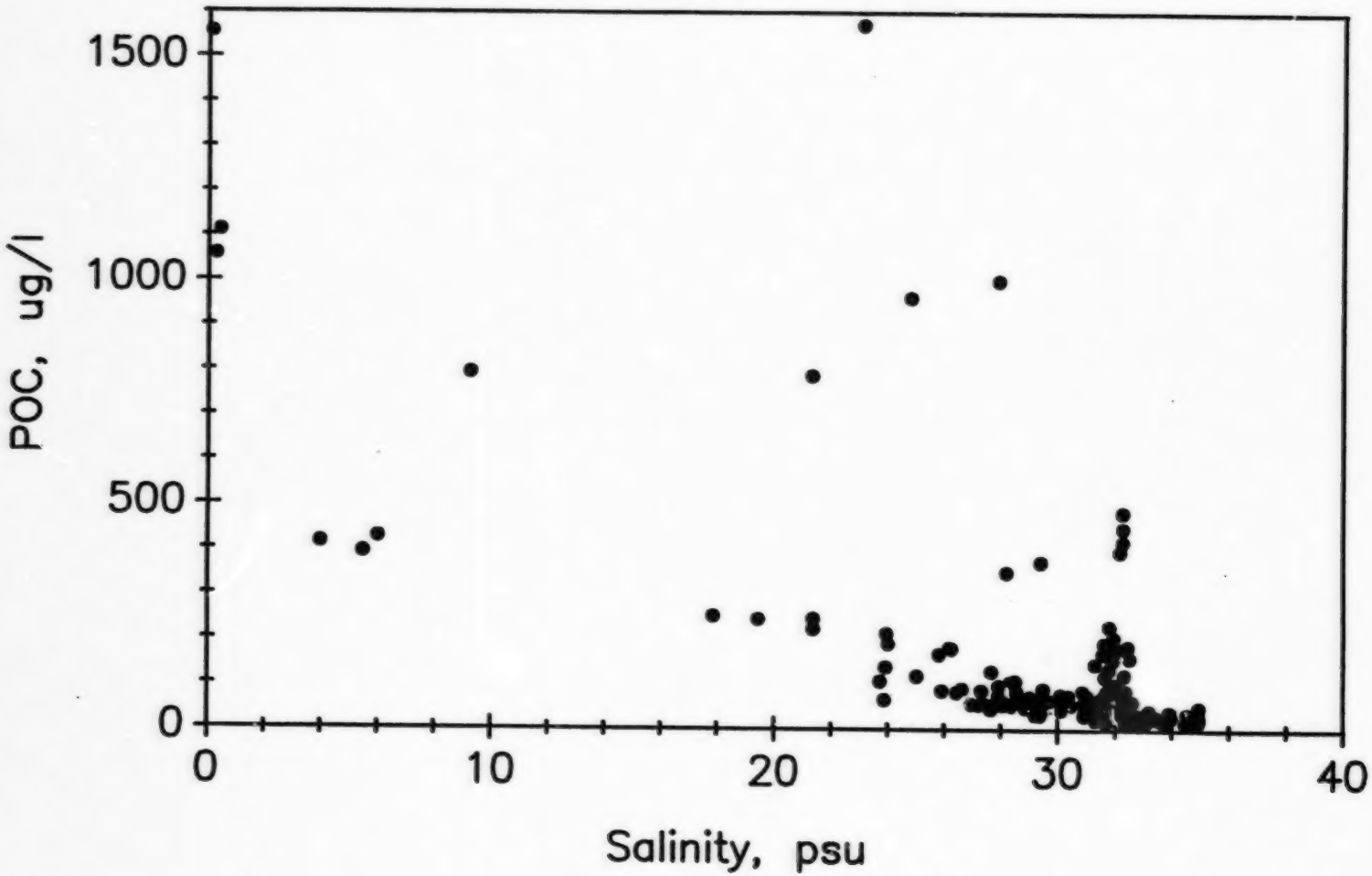

10
8
6
4
2
0
−2
Temperature, °C
0
10
20
30
40
Salinity, psu

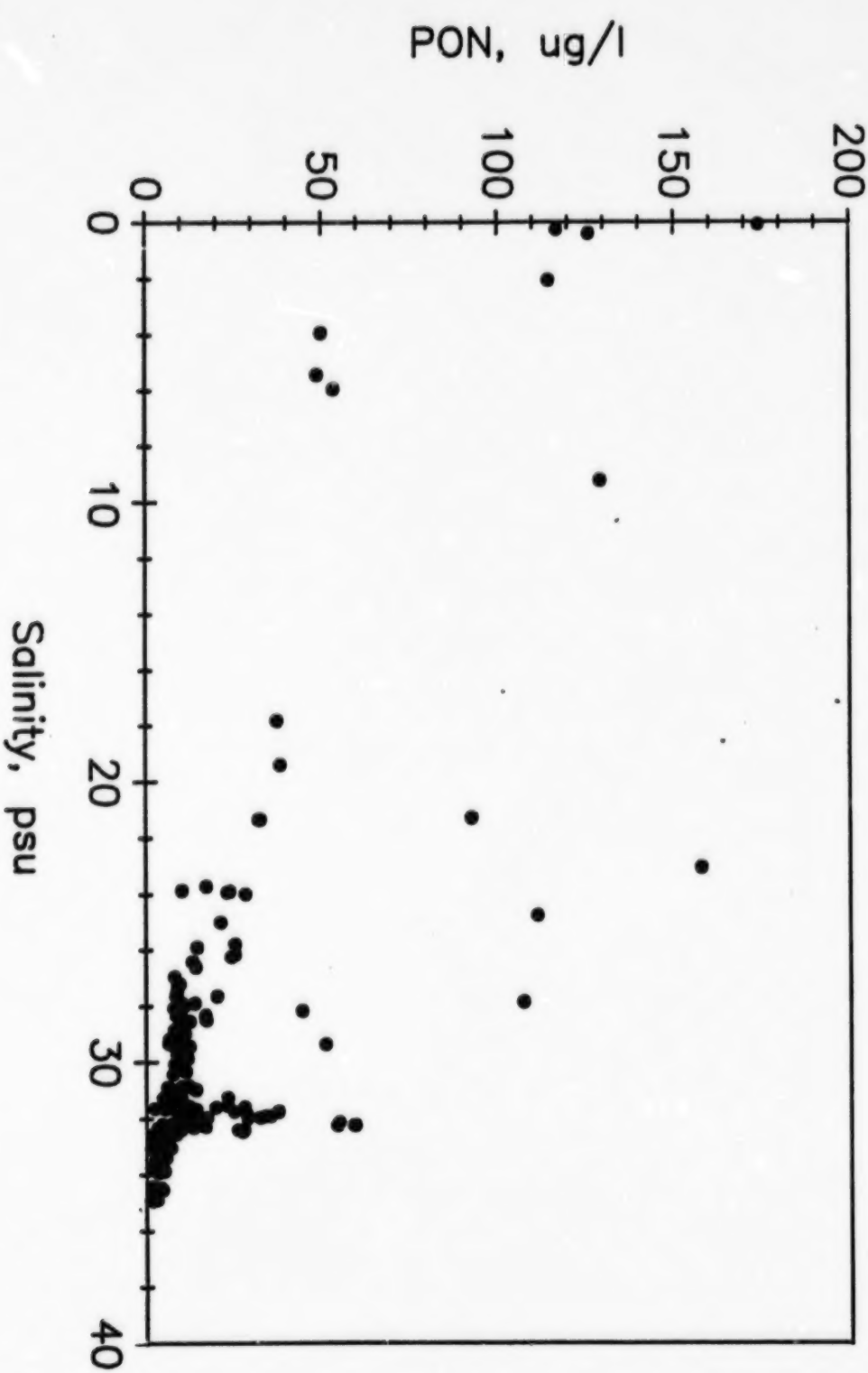

Oxygen, mmol/m³
200
250
300
350
400
450
0
10
20
30
40
Salinity, psu

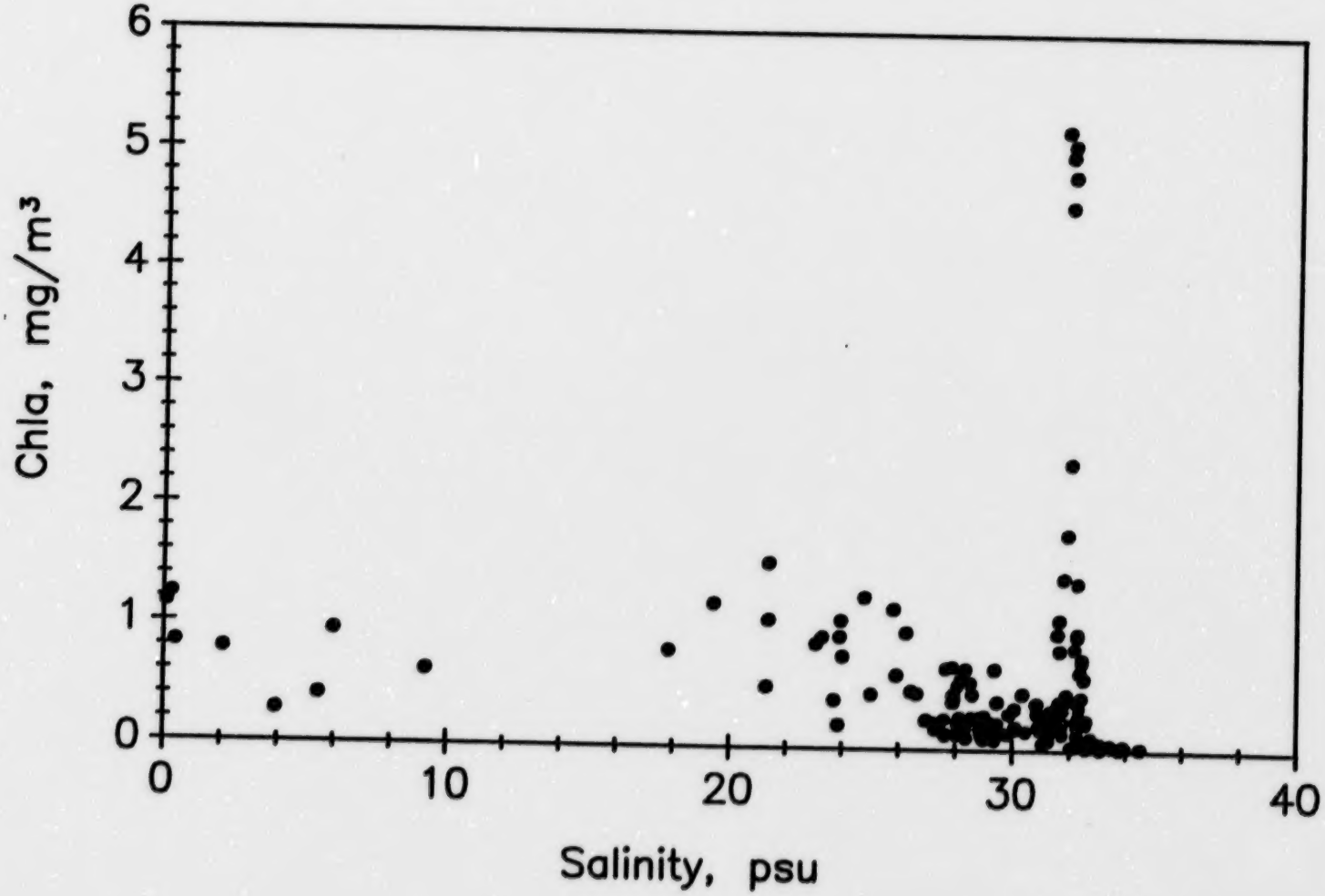

Phosphate, mmol/m³
0.0
0.5
1.0
1.5
2.0
2.5
0
10
20
30
40
Salinity, psu

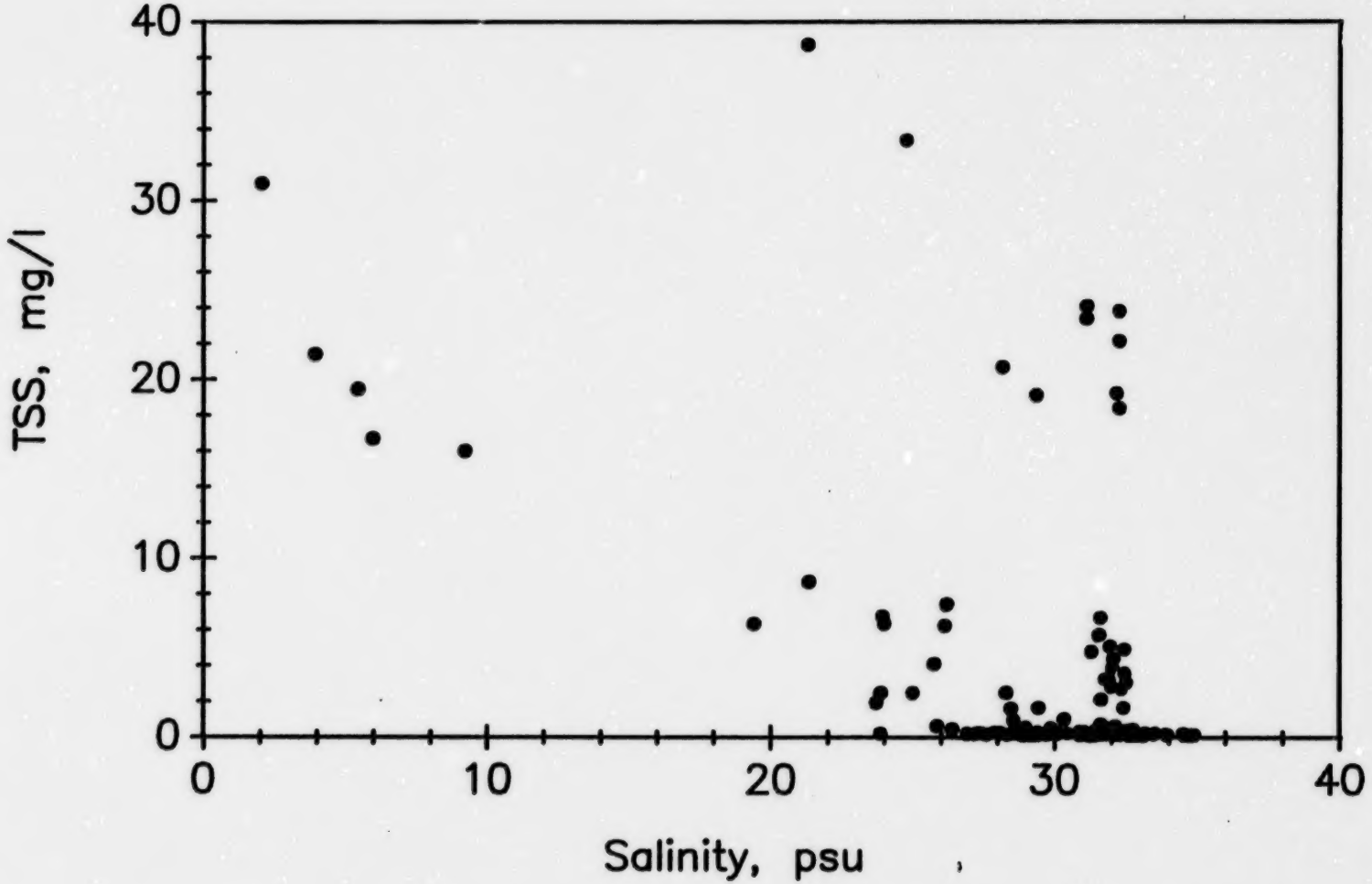

Silicate (R.A.), mmol/m³
0
10
20
30
40
60
Salinity, psu
0
10
20
30
40


Nitrate, mmol/m³
0
5
10
15
20
Salinity, psu
0
10
20
30
40


1500
1000
500
0
POC, ug/l
0
10
20
30
40
Salinity, psu


PON, ug/l
0
50
100
150
200
Salinity, psu
0
10
20
30
40


Chla, mg/m³
6
5
4
3
2
1
0
0
10
20
30
40
Salinity, psu


40
30
20
10
0
TSS, mg/l
0
10
20
30
40
Salinity, psu

NOGAP B.6 Data Reports in the Canadian Data Report of Hydrography and Ocean Sciences Series

Macdonald, R.W., K. Iseki, E.C. Carmack, D.M. Macdonald, M.C. O'Brien, and F.A. McLaughlin, 1988. Data Report: NOGAP B.6; Beaufort Sea Oceanography, September, 1986. *Can. Data Rep. Hydrogr. Ocean Sci.:* **58**, 68pp.

Cuypers, L.E., A.W. Blaskovich, E.C. Carmack, and R.W. Macdonald, 1988. NOGAP B.6; Physical data collected in the Beaufort Sea, September, 1986. *Can. Data Rep. Hydrogr. Ocean Sci.:* **59**, 149pp.

McCullough, D., R.W. Macdonald, K. Iseki, and E.C. Carmack, 1988. NOGAP B.6; Volume 1: Beaufort Sea current measurements, March-August, 1987. *Can. Data Rep. Hydrogr. Ocean Sci.:* **60**, 42pp.

Macdonald, D.M., L.E. Cuypers, D. McCullough, E. Carmack, and R.W. Macdonald, 1988. NOGAP B.6; Volume 2: Physical data collected in the Beaufort Sea, March-June, 1987. *Can. Data Rep. Hydrogr. Ocean Sci.:* **60**, 157pp.

McCullough, D., R.W. Macdonald, K. Iseki, and E.C. Carmack, 1988. NOGAP B.6; Volume 3: Beaufort Sea current measurements, September, 1987 - March, 1988. *Can. Data Rep. Hydrogr. Ocean Sci.:* **60**, 37pp.